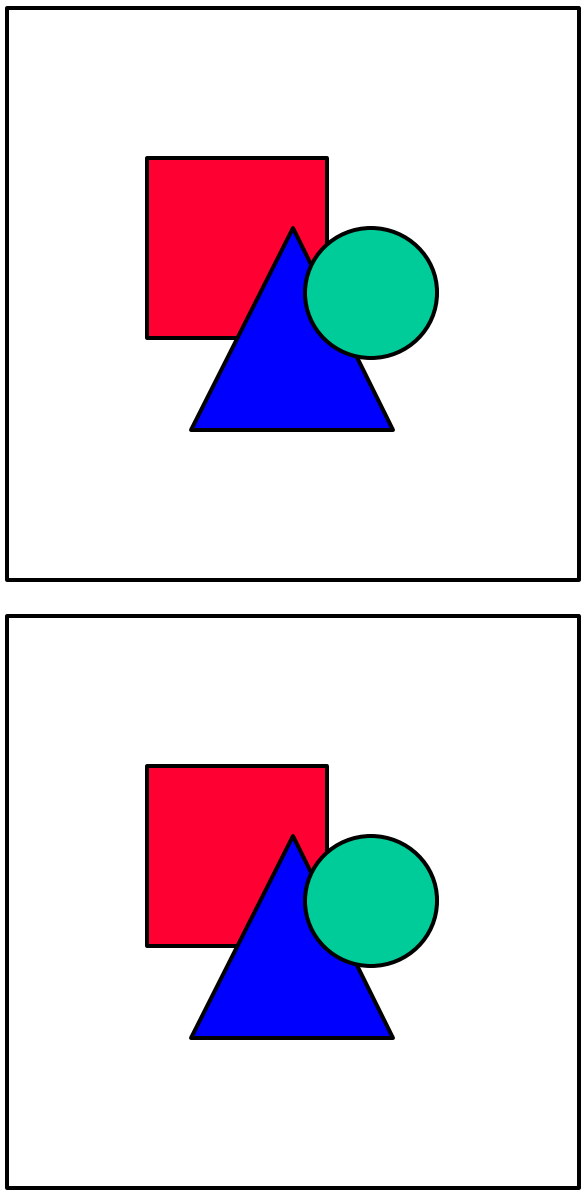

# Guidelines for Feeding Broiler Litter to Beef Cattle

Prepared by:
**Roger G. Crickenberger**
*Extension Animal Husbandry Specialist*

**Lemuel Goode**
*Professor*
*Department of Animal Science*

Published by North Carolina Cooperative Extension Service

Publication Number: AG-61

Last Electronic Revision: March 1996 (JWM)

***Beef cattle producers searching for ways to lower feed costs and/or stretch feed supplies should consider broiler litter as a possible nutrient source for wintering, growing, and finishing rations. When fed in nutritionally balanced rations, broiler litter is a valuable source of crude protein and minerals for beef cattle.***

# I. Nutritional Characteristics of Broiler Litter

Broiler litter contains bedding material, manure, wasted feed and feathers, and it may be accumulated from one or more flocks of broilers. Table 1 gives estimates of the nutrient content of broiler litter.

### Table 1. Nutrient Content of Broiler Litter.

| Nutrient | Dry matter basis, % | As fed basis, % |
|---|---|---|
| Dry matter, % | 100 | 75 |
| Crude protein, % | 20-30 | 15-23 |
| TDN, % | 55-60 | 40-45 |
| Calcium, % | 1.5-2.5 | 1.1 - 1.9 |
| Phosphorus, % | 1.5-2.5 | 1.1 - 1.9 |

Adding broiler litter to beef cattle rations at a level of 20% or higher (as fed basis) generally meets the animal's needs for crude protein, calcium, and phosphorus. Since litter composition varies among growers, each batch of litter should be analyzed to obtain accurate estimates of moisture, crude protein, and TDN.

# II. Handling and Processing Broiler Litter

Broiler litter to be used for cattle feed should contain at least 75% dry matter. If litter contains less than 70% dry matter, wet spots and mold can be problems. Since litter may contain scrap

metal, the material should be run through a hammermill equipped with a magnet to remove objects that may cause hardware disease. In addition, the material should be screened to remove pieces of wood, glass, etc.

# III. Ensiling Broiler Litter With Corn Silage

One useful method of using broiler litter for beef cattle is the incorporation of the material into corn silage at harvest time. When litter is added at a level of 30% of the total silage dry matter, several advantages are realized. First, the ensiling process appears to destroy harmful microorganisms carried in the litter. Second, litter at this level will balance corn silage for crude protein, calcium, and phosphorus for most classes of beef cattle. Third, a palatable feed should be produced which will be readily consumed by breeding, stocker, and finishing cattle.

When mixing litter with silage, the mixture should contain 30% litter plus 70% corn silage on a dry matter basis. Table 2 indicates the amount of litter required per ton of corn silage (fresh basis) when silage contains various levels of dry matter, assuming that litter is 75% dry matter.

**Table 2. Broiler Litter Required Per Ton of Fresh Corn Silage at Various Silaqe Dry Matter Levels.**

| Silage dry matter, % | Fresh corn silage, lb. | Fresh litter required, lb. |
|---|---|---|
| 30 | 2000 | 340 |
| 35 | 2000 | 400 |
| 40 | 2000 | 460 |

At ensiling, the litter should be thoroughly mixed with the fresh silage. A practical method of combining these materials would involve spreading litter over the top of a load of silage. Then during unloading the litter and silage should mix adequately. In all cases, it is important to chop corn finely, pack the silage mass well, and fill the silo as quickly as possible to obtain optimum fermentation conditions.

# IV. Feeding Recommendations for Litter Treated Corn Silage

Corn silage treated with broiler litter at 30% of the dry matter should provide adequate crude protein, calcium, and phosphorous for most beef cattle. A free choice supplement containing 300,000 IU of Vitamin A per pound of plain slat should be provided with the rations suggested below for several classes of beef cattle.

**A. Dry, pregnant cows:** Feed 35 to 40 lbs. of the litter-silage mixture per day.

**B. Lactating beef cows:**

1. Average milking ability (beef type): Feed 45 to 50 lbs. of litter treated silage per day.

2. Superior milking ability (dairy x beef): Feed 50 to 60 lbs. of litter treated silage per day. If cows do not consume this level of feed, 2 to 5 lbs. of corn may be fed with 45 to 50 lbs. of litter treated silage per day.

**C. Stocker calves:** Full feed of the litter treated corn silage.

# V. Stacked Broiler Litter

Broiler litter may also be *deep stacked*. Litter should be stacked at least six feet deep and allowed to heat for at least three weeks or more. Because of the danger of spontaneous combustion, this material should be stacked in an open shed or outside. Outside stacks need not be covered *if the damp outer layer is discarded before feeding*. Covering stacks with plastic will reduce weather damage.

Beef cow wintering rations offer the greatest potential for the use of stacked broiler litter. Cows may be wintered on a mixture of 89% litter and 20% ground corn (as fed basis) or other palatable concentrate. Grain is mixed with the litter to insure adequate consumption, since litter alone would meet the protein and energy needs of wintering cows if they ate enough of it. *A small amount of hay or other roughage should also be fed to aid rumen function and prevent rumen compaction.*

# VI. Feeding Recommendations for Stacked Broiler Litter

The salt-vitamin supplement given on page 3 should be fed free choice with the rations suggested below for different classes of beef cattle.

**A. Dry, pregnant cows**

1. Feed 15 to 16 lbs. of a stacked litter-corn mixture (80:20) plus 3 lbs. of hay or equivalent roughage per day.

2. Feed 24 to 26 lbs. of corn silage top-dressed with or mixed with 10 to 12 lbs. stacked litter.

**B. Lactating cows**

1. Average milking ability (beef type)

    a. Feed 19 to 21 lbs. of the litter-corn mixture (80:20) plus 3 lbs. hay per day.
    b. Feed 28 to 30 lbs. of corn silage plus 12 to 13 lbs. stacked litter.

- 2. Superior milking ability (dairy x beef)

    a. Feed 27 to 28 lbs. of the litter-corn mixture (80:20) plus 3 lbs. of hay per day. If intake falls below these levels, feed 5 lbs. corn plus 19 to 21 lbs. of the litter-corn mix

plus 3 lbs. hay per day.
b. Feed 35 to 42 lbs. of corn silage plus 15 to 18 lbs. of stacked broiler litter.

**C. Stocker calves** - 400 to 500 lbs., gaining 1 to 1.5 lb./ day (Select the most economical or practical option for a particular operation.)

1. Feed 8 to 9 lbs. of a stacked litter-corn mixture (50:50) per day plus good quality hay free choice.

2. Feed 9 lbs. of the litter-corn mix plus 10 lbs. of corn silage per day.

3. Feed 25 lbs. of corn silage per day, top-dressed with 5 lbs. stacked litter.

4. For stocker calves to gain 1 lb. per day and pasture during summer, feed 20 lbs. corn silage plus 4 lbs. stacked broiler litter.

# VII. Finishing Rations Containing Broiler Litter

As much as 15 to 25% of the dry matter in beef cattle finishing rations can be broiler litter. It can be fed either as litter ensiled with corn silage or by mixing deep stacked litter with silage or other feeds at feeding time. When fed with silage plus concentrate, such as ground corn at 1% of body weight, 20% broiler litter in the ration on an "as-fed" basis will provide all the protein needed to balance the ration. For example, yearling steers weighing 700 to 800 lbs. and gaining 2.9 lbs. per day require 1.95 lbs. of crude protein and 15.5 lbs. of TDN per day. A daily ration of 30 to 35 lbs. of corn silage, 4 to 5 lbs. of broiler litter and 8 lbs. of corn will supply all the energy and protein needed.

# VIII. Management Factors Related to Using Broiler Litter as a Feed for Beef Cattle.

**A.** One of the main reasons for *ensiling or deep stacking* litter is to destroy harmful microorganisms. However, if litter is stacked or ensiled with either excess or inadequate moisture, resulting *moldy material may contain toxins and should not be fed to cattle.* Therefore aim to have about 25% moisture in litter that will be deep stacked. Corn silage-litter mixtures should contain about 60 to 65% moisture for optimum fermentation.

**B.** Past research and field experience have shown that some rations containing poultry litter are unpalatable to cattle. Allow at least three weeks to start cattle on rations containing litter, and gradually increase the amount of litter in the ration up to the desired amount. Similarly if cows are to be fed litter during lactation, start cows on litter rations before calving to ensure that intake is sufficient to meet nutritional requirements. Some animals may refuse to eat an adequate amount of broiler litter rations. Such animals should be culled or placed on another ration.

**C.** Rations containing litter should be supplemented with salt at 0.25% of the ration dry matter or fed free choice.

**D.** As with any nutritional program, best results can be obtained if the nutrient content of feeds is known. Since the nutrient content of broiler litter is known to vary, it would be advisable to have samples analyzed regularly.

---



---