

## CALCULATION OF APPLICATION RATES

A soil test is required to determine basic nutrient requirements for crops grown on your soil. The figures used in the yield goal table are based on a poor soil. The higher your native soil fertility, the less litter or fertilizer that will be required. A soil sample should be taken from 0-6 inches and 6-12 inches deep. Soil sampling information forms are included in the Records Section. Monitoring your soil profile will provide you with information to determine if nitrogen is leaching through your soil. Applying litter according to its quality and crop yield goal requirements will allow litter to be applied to soils indefinitely. Over the years these soil tests will provide data to show state and national agencies that management has done an excellent job of applying litter as required by the crop.

1. The crop yield goal in Table 1 (of Land Application Based on Crop Needs) is used to determine the nutrients required by the crop to be grown.
2. The soil test is used to determine the fertility of the soil.
3. The broiler litter analysis is used to determine the nutrient content. If an analysis is not available, use average nutrient figures.
4. Subtract nitrogen in soil from nitrogen required by crop.
5. Determine tons litter per acre to meet nitrogen requirements.
6. Determine pounds of nutrients per acre supplied by the tons of litter determined in Step 5. One hundred sixty-five (165) pounds of  $P_2O_5$  are applied in excess of crop requirement and an additional 96 pounds of  $K_2O$  will be needed.
7. The soil test (No. 2) showed the  $P_2O_5$  level to be medium (M) so the amount of  $P_2O_5$  needs to be reduced to no more than twice the amount of  $P_2O_5$  required by the crop. (200 lbs.)
8. Multiplying 4 tons litter by the litter nutrient analysis shows the  $P_2O_5$  level to be twice the amount of  $P_2O_5$  and an additional 64 pounds of nitrogen and 100 lbs. of  $K_2O$  will need to be applied as commercial fertilizer to meet the crop needs.

# SAMPLE

## DETERMINE RATE OF BROILER LITTER APPLICATION

1. Determine nutrient recommendation (lbs. / acre) for crop to be grown from Table 1:

Crop - **Coastal Bermuda grass cut 3 times**

Nutrient Requirement (lbs. / acre)	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
	<b><u>300</u></b>	<b><u>100</u></b>	<b><u>300</u></b>

2. Soil Test::

N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
<b><u>2 ppm</u></b>	<b><u>15 ppm</u></b>	<b><u>35 ppm</u></b>
Very Low	Medium	Very Low

3. Broiler Litter Analysis:

Use average figures (found in Table 1 of Nutrient Content of Broiler Litter) if analysis is not available.

N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
<b>58</b>	<b>52</b>	<b>40</b>

4. Subtract the nitrogen in the soil from the nitrogen the crop requires.

	N
N crop requires	<b>300</b>
N in soil (Soil test ppm x 2)	<b>4</b>
Total N required	<b>296</b>

5. Determine rate of broiler litter to apply (lbs. / acre).

$$\frac{\text{N Crop requires}}{\text{N in Litter}} = \text{Rate / litter (tons/acre)}$$

$$\frac{296}{58} = 5.1 \text{ (tons/acre)}$$

6. Nutrient balance:

	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
Pounds nutrients required by crop (# 1 AND # 4)	<b>296</b>	<b>100</b>	<b>300</b>
Pounds nutrients applied in <u>5.1</u> tons of litter (# 5 x # 3)	<b>296</b>	<b>265</b>	<b>204</b>
Total nutrients applied lbs. / acre	<b>0</b>	<b>165</b>	<b>- 96</b>

7. Determine if the amount of phosphorus applied is greater than twice the amount of phosphorus needed. If this is true, the rate of broiler litter should be reduced one ton per acre, or until the amount of phosphorus applied is no greater than twice the amount needed. If the soil test is high in phosphorus, then only the amount of phosphorus required by the crop should be applied.

	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
Pounds nutrients required by crop	<b>296</b>	<b>100</b>	<b>300</b>
Pounds nutrients applied in <u>4</u> tons of litter	<b>232</b>	<b>208</b>	<b>200</b>
Balance	<b>- 64</b>	<b>108</b>	<b>- 100</b>

8. The amount of commercial fertilizer needed to meet crop requirements after 4 tons of broiler litter is applied.

N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
<b>64</b>	<b>0</b>	<b>100</b>