Using Poultry Litter for Fertility on Pastures and Hayfields

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Characteristics of Poultry Litter

• "3-2-2"
  - Variance with type of bird, ration, # of growouts, feed efficiency, storage & handling

Characteristics of Poultry Litter

• Nitrogen both "available" and "unavailable"
  - Total nitrogen = 64 lbs/ton
  - Ammonium nitrogen = 10 lbs/ton
• Most N is organic form
• Has to be mineralized before plant available

Characteristics of Poultry Litter

• Ammonium-nitrogen (NH₄-N) "volatilized"
• Lost to the atmosphere
• Higher losses in hot, dry conditions

The Value of Litter

(2009 Prices)
60#N \times 0.50 \times 0.6 = 18.00
40#P₂O₅ \times 0.80 \times 0.8 = 25.60
40#K₂O \times 0.70 \times 0.8 = 22.40
Total = $66.00

STRATEGIES FOR TIGHT BUDGETS AND MINIMAL RISK

Using Poultry Litter for Fertility

**Slow Release**

- 80% organic N
- Released slowly over growing season

**Cattle Gains**

<table>
<thead>
<tr>
<th>Season of Year</th>
<th>Stocker Cattle Gain (lbs/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winter</td>
<td>IF &gt; PL</td>
</tr>
<tr>
<td>Spring</td>
<td>IF &gt; PL</td>
</tr>
<tr>
<td>Summer</td>
<td>IF &gt; PL</td>
</tr>
<tr>
<td>Autumn</td>
<td>IF = PL</td>
</tr>
</tbody>
</table>

Franzuebbers AJ, and Stuedemann JA. USDA ARS. Phil Campbell, Sr. Natural Resource Center

**Other Nutrients**

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Amount</th>
</tr>
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<tbody>
<tr>
<td>Calcium</td>
<td>43 lbs/ton</td>
</tr>
<tr>
<td>Magnesium</td>
<td>9 lbs/ton</td>
</tr>
<tr>
<td>Sulfur</td>
<td>15 lbs/ton</td>
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</table>

**Micronutrients**

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Amount</th>
</tr>
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<tbody>
<tr>
<td>Manganese</td>
<td>327 ppm</td>
</tr>
<tr>
<td>Copper</td>
<td>287 ppm</td>
</tr>
<tr>
<td>Zinc</td>
<td>262 ppm</td>
</tr>
</tbody>
</table>

**Liming**

- Calcium provides some liming value - about 1/10th strength of limestone
- NW Georgia after 4 years
  - PL at 4 t/acre  pH = 5.76
  - NO₃-NH₄ (no lime)  pH = 5.18
- NE Georgia after 5 years
  - PL at 4 t/acre  pH = 6.0
  - NO₃-NH₄ + lime  pH = 6.0

**Organic Matter**

- Does provide some organic matter
- Higher organic matter soils help prevent compaction
- Increasing infiltration into soil

**Redbud Test Plots 2000 - 2003 Soils**

Overapplication quickly increases soil test P to problem levels.
Notice increase in composted poultry litter.

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Redbud Test Plots 2000 – 2003 Water Quality

Overapplication creates potential for higher impacts to water quality

NPDES limit. Ecological limit 0.035 mg/L.

Will The “P Issue” Bog Us Down?

Litter Utilization

- Best Value = Straight from house
- # 2 = Cover with plastic or stackhouse

Timing and Amount of Application

Apply when plant needs it
Early application = Loss of N and K
Calibrate spreaders

Proper Use

- Do soil and litter testing
- Apply at agronomic rate
- Follow setbacks from sensitive areas
- Good neighbor relations

Weeds

Studies indicate no weed seeds in PL, BUT nutrients can stimulate weed growth
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Importance of Mineral Supplements

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Potential for grass tetany (Calcium/Magnesium)
Potential for copper deficiencies (Sulfur)
Need to use proper mineral supplements with any fertilization program!

AGRICULTURAL POLLUTION PREVENTION PROGRAM

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www.agp2.org

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