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Changing Current Standards
To improve the current procedures for estimating nutrient excretion, a joint ASAE/FASS 1 committee of agricultural engineers and animal scientists have been assembled to review and rewrite the current ASAE Standard on Manure Production and Characteristics. Several NRCS representatives are actively involved in these discussions with the potential for revising NRCS standard estimates based upon ASAE changes. This committee is currently addressing the following three topics:

1. As Excreted–Feed Intake Summary: Characteristics of excreted manure will be defined based upon a mass balance approach illustrated in Figure 1. Predictive equations for excretion estimates will be developed.

2. As Excreted–Average Summary: Existing average ASAE standard values of excreted manure will be redefined based upon estimates from Topic #1 for current average feed programs.

3. As Removed–Average Summary: An estimate of average as-removed manure characteristics for common animal housing and manure storage systems would be assembled, based in part on the MWPS-18, Manure Characteristics handbook.

Summary
Opportunities exist to improve our estimates of nutrient excretion using an animal nutrient balance model. The attached tool (see Table 1) provides one method of estimating nutrient excretion based upon current feeding practices and evaluating the impact of changes in the feed program on the overall nutrient management program. Such procedures will also be of value to producers adopting animal feeding programs designed to reduce nutrient excretion and achieve compliance with public policy goals for nutrient management planning. NRCS and ASAE standards for nutrient excretion will need to reflect these alternative procedures.
UNL’s Livestock Environmental Issues Committee
Includes representation from UNL, Nebraska Department of Environmental Quality, Natural Resources Conservation Service, Natural Resources Districts, Center for Rural Affairs, Nebraska Cattlemen, USDA Ag Research Services, and Nebraska Pork Producers Association.

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References


Table 1. Nutrient balance estimate of manure nutrient excretion.

### I. Feed Nutrient Intake

<table>
<thead>
<tr>
<th>a. Animal Group</th>
<th>b. Group Daily Feed Intake (lbs/day)</th>
<th>Feed Nutrient Concentration (%)</th>
<th>Total Nutrient in Feed (lbs/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example: 1,000 beef finishers</td>
<td>27,000 lbs DM/day</td>
<td>13.3%</td>
<td>13.5 ÷ 6.25 = 2.16%</td>
</tr>
</tbody>
</table>

### II. Nutrients Retained by Animal

<table>
<thead>
<tr>
<th>a. Animal Group</th>
<th>h. Maximum One-time Capacity (# of animals)</th>
<th>i. Average Daily Gain/Animal (lbs/day)</th>
<th>j. Live Weight Nutrient Concentration</th>
<th>Daily Nutrients Retained by Animal (lbs/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>k. N</td>
<td>l. P</td>
<td>m. P</td>
<td>n. P</td>
</tr>
<tr>
<td>Example: Beef</td>
<td>1.000</td>
<td>4.1 lbs/day</td>
<td>0.026</td>
<td>0.0070</td>
</tr>
</tbody>
</table>

Beef
Dairy
Pork
Hens
Broilers
Turkeys

### III. Nutrients Retained by Animal Products

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>q. N (n x o)</td>
<td>r. P (n x p)</td>
</tr>
<tr>
<td>Milk†</td>
<td></td>
<td>0.0050</td>
<td>0.0010</td>
</tr>
<tr>
<td>Eggs‡</td>
<td></td>
<td>0.0166</td>
<td>0.0021</td>
</tr>
</tbody>
</table>

### IV. Nutrient Excretion by Animals

<table>
<thead>
<tr>
<th>a. Animal Group/Product</th>
<th>s. Days Fed Per Year (days/yr)</th>
<th>t. Annual Nutrient Excretion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>l. N [s x (f – l)] or [s x (f – q)] (lbs/yr)</td>
<td>u. P [s x (g – m)] or [s x (g – r)] (lbs/yr)</td>
</tr>
<tr>
<td>Example: Beef finisher</td>
<td>350 days/yr</td>
<td>350 x (583 – 107) = 167,000 lbs/yr</td>
</tr>
</tbody>
</table>

Total

**Part 1 and Part 2 of this newsletter was published in the October 2002 version of the LPES (Livestock and Poultry Environmental Stewardship) curriculum project. For more information contact Diane Huntrods ([huntrods@iastate.edu](mailto:huntrods@iastate.edu)) or visit the website ([www.lpes.org](http://www.lpes.org)).**