Pasture and Meadow Nutrient Management.

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Nutrient Cycling in Pastures and Meadows.
Components of Nutrient Management

• Mass Balance = Import – Export
  – Import = hay + silage + grain + minerals + fertilizer
  – Export = milk + meat + wool + surface loss + leaching

• Recycling in pastures and meadows
  – Nutrient content of pasture
  – Uniformity over area (or lack of)
  – Location of areas having a net manure import
  – Location of areas having a net manure export
## Nutrient Value of Pasture

<table>
<thead>
<tr>
<th>Feed</th>
<th>Pounds/Ton at 90% Dry Matter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
</tr>
<tr>
<td>Pasture, grass</td>
<td>58</td>
</tr>
<tr>
<td>Pasture, mm grass</td>
<td>63</td>
</tr>
<tr>
<td>Pasture, mm legume</td>
<td>63</td>
</tr>
<tr>
<td>Pasture, legume</td>
<td>69</td>
</tr>
</tbody>
</table>
Magnitude of Annual Nutrient Cycling For Six Animal Unit Months (AUM) of Grazing and Nutrient Removal By a 500 lb. Steer or 100 Cwt Milk.

<table>
<thead>
<tr>
<th></th>
<th>P</th>
<th>K</th>
<th>Ca</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 AUM (2.3 t DM)</td>
<td>39.8</td>
<td>152.2</td>
<td>85.7</td>
</tr>
<tr>
<td>500 lb. Steer</td>
<td>7.4</td>
<td>1.3</td>
<td>13.9</td>
</tr>
<tr>
<td>100 cwt. Milk</td>
<td>22.9</td>
<td>16.9</td>
<td>30.0</td>
</tr>
</tbody>
</table>
Effect of Distance From Fence Line and Water Tank on Soil Test K
Sample Field Management Units
Manure Distribution in a 3 Paddock System

A) 3-paddock system
Manure Distribution in a 12 Paddock System

B) 12-paddock system
Manure Distribution in a 24 Paddock System

C) 24-paddock system
Manure Distribution Across Landscape.

Flat

Gullied

A

B

Feet East from Water

Feet South from Water

PILES PER 500 FT²

10-20

20-30

30-40

>40

Feet West from Water

Feet North from Water

PILES PER 500 FT²

10-20

20-30

30-40

40-50

>50
In WV, rotationally grazed pastures having woods covering about 33% of the landscape, have about 66% of the manure deposited under the trees.
Count Cow Pies in Different Areas to Estimate Efficiency of Manure Cycling in Pastures and Meadows.
Divide the pasture into different areas based on slope, aspect, shade, water, mineral feeder, and other cow use factors. Count the number of cow pies per acre in the different areas.
To Improve Nutrient Cycling in Pastures

- Use rotational grazing.
- Use relatively small pastures on uniform areas of the landscape (soil, slope, aspect).
- Use moveable water sources.
- Have no shade or numerous uniformly spaced shade trees or movable shade in the pasture.
- Use strategic fertilization within pastures
Strategic Nutrient Management

- Soil sample and fertilize strategically
- Feed hay on meadows where it was grown
- Apply manure on fields where feed was grown
- Feed minerals where more fertility is needed
- Control shade and water to control nutrient cycling
- Feeds produced on the farm are “paid for” nutrients
- Feeds brought onto the farm are new nutrients
- Feeds and animals moved off the farm are lost nutrients