Nutrient Management Plan

Macy Fawns
What is a Nutrient Management Plan?

1) Determine the total volume and amount of nutrients generated on the farm.

2) Determine soil fertility with bi-annual soil tests.

3) Determine nutrient application rates.
What is a Nutrient Management Plan?

4) Create a cropping plan for utilizing generated manure on a field-by-field basis for five years.

5) Implement the plan, keep records, and follow guidelines and regulations.
Who Needs a NMP and Why?

- Manure is valuable, if you use it correctly!
- Anyone who has animals confined and/or spreading manure.
- If inspected by DOW they will ask for a updated NMP.
- Protect stream, lakes, rivers, etc.
Types of Nutrient Management Plans

- Kentucky Nutrient Management Plan
- Comprehensive Nutrient Management Plan
Who can Write a Nutrient Management plan?

• Kentucky Nutrient Management plan
  - Producers
  - Conservation
  - Extension
• Comprehensive Nutrient Management Plan
  - Technical Service Providers
What is needed

- Soil test (at least two years or newer)
- Manure test
- Field map with acreages
Why is a Manure Test Important?

<table>
<thead>
<tr>
<th>Table 2.</th>
<th>N Value</th>
<th>P\textsubscript{2}O\textsubscript{5} Value</th>
<th>K\textsubscript{2}O Value</th>
<th>Total Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inside Estimate</td>
<td>$158.18</td>
<td>$265.85</td>
<td>$181.30</td>
<td>$605.33</td>
</tr>
<tr>
<td>Inside Actual</td>
<td>$318.06</td>
<td>$1007.50</td>
<td>$779.96</td>
<td>$2105.52</td>
</tr>
<tr>
<td>Outside Grazing</td>
<td>?</td>
<td>?</td>
<td>?</td>
<td>?</td>
</tr>
</tbody>
</table>
Kentucky Nutrient Management Planning Guidelines (KyNMP)

Steve Rogers and Kyle Schenk, Entomology and Agricultural Engineering, and Jannada Caudert, Agriculture Extension Program
### 1. Nutrients Generated (As Excreted)

<table>
<thead>
<tr>
<th>Animal Type</th>
<th>Number of Animals</th>
<th>Percent Waste as Liquid</th>
<th>Average Weight (lbs)</th>
<th>Containment Period (days/year)</th>
<th>Animal Unit</th>
<th>Table 1 Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50</td>
<td>100%</td>
<td>1,400.0</td>
<td>1000</td>
<td>45</td>
<td>3.150</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>P₂O₅ 0.21 = 662</td>
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<tr>
<td></td>
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<td></td>
<td>K₂O 0.35 = 1,103</td>
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<td>N</td>
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<td></td>
<td></td>
<td>P₂O₅</td>
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<td>K₂O</td>
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<td></td>
<td>P₂O₅</td>
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<td></td>
<td></td>
<td></td>
<td>K₂O</td>
</tr>
</tbody>
</table>

**Step 1 Total =** 1,418 662 1,103

### 2. Manure Generated (As Excreted)

**Animal Unit Day x Manure/AU = Volume of Manure (gallons)**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3,750</td>
<td>1.4</td>
<td>33,075</td>
<td>3,750</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
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<td>0</td>
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</tr>
</tbody>
</table>

**Step 2 Total = 33,075 gallons**

### 3. Water Added by Wastage or Cleaning

**Gallons/Day x No. of Head x Confinement Period = Volume of Water (gallons)**

- **Step 3 Total = 11,250 gallons**

### 4. Water Added by Feedlot Runoff

**Width (feet) x Length (feet) x Days Before x Conversion = Feedlot Runoff (gallons)**

- **Permeable Surfaces**
  - 0.75 x 100 x 180 x 18.75 = 63,349
- **Penimperable Surfaces**
  - 0 x 0 x 0 x 0 = 0

**Step 4 Total = 63,349 gallons**

### 5. Water Added from Rainfall minus Evaporation on Storage Pond

**Width (feet) x Length (feet) x Days Before x Conversion = Net Rainfall on Storage Pond (gallons)**

| Lagoon/Pond Surface Area | 120 | 120 | 180 | 11.25 | 73,890 |

**Step 5 Total = 73,890 gallons**

### 6. Total Volume of Manure Produced

**Step 6 Total = 193,565 gallons**

### 7. Weighted Nutrient Values Before Nutrient Losses

**Step 7 Totals = 7.3 3.4 5.7 (lbs/1,000 gallons)**
Phosphorus Threshold

- <400- Nutrient Applications can be based upon crop nitrogen requirements.
- 401-600 Phosphorus applications at rates not to exceed the estimate removal of the plant.
- 601-800 Phosphorus applications at rates not to exceed ½ of estimated removal of the plant.
- >800 applications are not longer allowed and need a drawdown strategy.
LIQUIDS WORKSHEET 2 - NUTRIENT BALANCE

<table>
<thead>
<tr>
<th>Tract</th>
<th>Field No.</th>
<th>Acres</th>
<th>Soil Test P Value (Mehlich 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>15</td>
<td>200</td>
</tr>
</tbody>
</table>

1. Crop or Crop Sequence/Rotation
2. Realistic Yield [Average from 5-10 Years on a per acre basis]
3. Plant Nutrients Needed or Allowed (Ibs/ac)
4. Adjusted P₂O₅ Application Rate According to Threshold
5. Fertilizer Credits (Ibs/ac)
6. Plant Nutrients Needed Minus Credits (Ibs/ac)
7. Nutrients in Manure (Ibs/1,000 gallons)
   Enter lab results in box on right to override Worksheet 1 values
8. Percent Nutrients Retained in System
   Table 1
   Enter Table 1 values or Enter zero if lab results are used in Step 7
9. Net Retained Nutrients in Manure (Ibs/1,000 gallons)
10. Percent of Available Nutrients
    Table 2
    Enter Table 2 value for N
11. Net Available Nutrients (Ibs/1,000 gallons)
12. Application Rate (1,000 gallons/ac)
    Application limitations may apply.
    Enter Chosen Application Rate in box on right
13. Net Application Amount for All Nutrients (1,000 gallons/ac)
14. Nutrient Needs (-) or Surpluses (+) (1,000 gallons/ac)


Uniform Application Rate: 12.904 gallons/ac
<table>
<thead>
<tr>
<th>Field No.</th>
<th>Acres</th>
<th>Soil Test Phosphorus (STP)</th>
<th>Crop Rotation / Sequence</th>
<th>Planned Application Date or Timing</th>
<th>Planned Application Rate (^2) (1,000 gal/ac)</th>
<th>Liquid or Commercial Fertilizer (L or C)</th>
<th>Actual Application Date</th>
<th>Actual Application Rate (^2) (1,000 gal/ac)</th>
<th>Weather at Time of Application (^3) (Cloudy, Raining, Sunny)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>15</td>
<td>200</td>
<td>Corn Silage (Ton)</td>
<td>Spring 2016</td>
<td>12</td>
<td></td>
<td>0</td>
<td>0</td>
<td>24 Hours Before</td>
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<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td>24 Hours After</td>
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</tbody>
</table>

1. Where land application is occurring under long term lease or agreement with adjacent landowner, fields must be included in the above table.

2. Fields that have a “High” soil test phosphorus (>400) should implement Best Management Practices (BMPs) to reduce the risk of nutrient movement to sensitive waterbodies. BMPs may include, but not be limited to: installing conservation buffers, reducing P2OS application rate, incorporating manure, adding chemical treatments to litter that tie up soluble P and keep it from moving over the landscape, and/or adjusting application timing.

3. It illegal to make land applications when the ground is frozen. It is recommended that land applications are not made within 48 hours of forecasted precipitation.
# Setback Distance

## Table A. Manure Application Setback Distances

<table>
<thead>
<tr>
<th>Setback Feature</th>
<th>Liquid Manure Operations</th>
<th>Dry Manure Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Barn or Lagoon</td>
<td>Barn and/or Manure Storage Structure (Facilities)</td>
</tr>
<tr>
<td>Lake, river, stream (a defined channel with flow three months or more of the year), spring, or karst feature (e.g. sinkhole, depression, etc.)</td>
<td>150 feet</td>
<td>35&lt;sup&gt;c&lt;/sup&gt; or 75 feet</td>
</tr>
<tr>
<td>Water well&lt;sup&gt;b&lt;/sup&gt;</td>
<td>300 feet</td>
<td>75&lt;sup&gt;c&lt;/sup&gt; or 150 feet</td>
</tr>
</tbody>
</table>
## Setback Distance

### Table B. Setbacks and Siting Criteria

<table>
<thead>
<tr>
<th>Setback Feature</th>
<th>Barn or Lagoon</th>
<th>Land Application Area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Injection</td>
<td>Other Method</td>
</tr>
<tr>
<td>Dwelling not owned by applicant, church, school, schoolyard, business, park or other structure to which the general public has access</td>
<td>1,500 feet</td>
<td>500 feet</td>
</tr>
<tr>
<td>Incorporated city limit</td>
<td>3,000 feet</td>
<td>1,000 feet</td>
</tr>
<tr>
<td>Lake, river, blue-line stream or karst feature</td>
<td>150 feet</td>
<td>75 feet</td>
</tr>
<tr>
<td>Water well not owned by applicant</td>
<td>300 feet</td>
<td>150 feet</td>
</tr>
<tr>
<td>Downstream water listed as Outstanding State Resource Water, Outstanding National Resource Water or Exceptional Water</td>
<td>1 mile</td>
<td>750 feet</td>
</tr>
<tr>
<td>Downstream public water supply surface water intake</td>
<td>5 miles</td>
<td>1 mile</td>
</tr>
<tr>
<td>Roadways, primary (state and federal)</td>
<td>150 feet</td>
<td>75 feet</td>
</tr>
<tr>
<td>Roadways, secondary (county)</td>
<td>150 feet</td>
<td>75 feet</td>
</tr>
</tbody>
</table>
Guidelines & Regulations

• Do not exceed ½ inches or 13,500 gallons per acre for one time application.
• Do not exceed 10 tons per ace for one time application of solids.
• Avoid applying to field without growing crop.
• Do not apply manure when the ground is frozen.
Keep Yourself Out of the Mud

• Nutrient management plans can be written for up to five years.

• Soil test should be taken every two years.

• You will still need a Nutrient management plan if you sell or buy manure.
Permit

• Kentucky No Discharge Operational Permit (Short Form B, Section 5)
  - General Permit
  - Expires, must re-apply
• Keep solid manure covered
III. SOURCE AND DESTINATION OF WASTES

Indicate the number of animals the facility is currently supporting or plans to support in the Delta water.

<table>
<thead>
<tr>
<th>Type of Animals (include approximate size per animal)</th>
<th>Number of Animals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total:  

Current or planned method of waste storage: (Holding Pond, Holding Tank, Stock Pit, etc.)

Comments:

IV. FACILITY DESCRIPTION (Location)

Facility Name:

Waste Treatment Certification (WTC): Code and Description (if used, check appropriate box)

Location Address:

Comments:

V. Certification

Papers prepared by [Name] and [Name] under my direction and supervision in accordance with a system designed to assure that each step of the process is recorded accurately and with the information submitted to the department is complete and accurate. I am responsible for the preparation and submission of the report, and I certify that this report is true and correct.

Printed or Typed Name of Person Preparing Report:

Title:

Date準備ed:

Signature:

Date of Application:

Reference:

[Handwritten reference]
Record Keeping

- Use the included forms to make daily and weekly inspections.
- Note any deficiencies and the corresponding corrective actions taken.
- Maintain records of mortalities and how they were managed.
Review

• Nutrient management plan & implement (Good for 5 years, unless farm changes).
• Ag Water Quality Plan
• KY No Discharge Operational Permit
• Keep good records