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Where’s the Poop? Environmental Challenges for Large and Small Animal Feeding Operations

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Heartland Regional Regional Water Coordination Initiative Conference

DoubleTree Hotel - Overland Park, KS

October 26 - 28, 2005

Online at: http://www.oznet.ksu.edu/waterquality/Reg_Conf/presentations.htm
Where’s the Poop? Environmental Challenges for Large and Small Animal Feeding Operations

Rick Koelsch, University of Nebraska and John Lawrence, Iowa State University
Where’s the Poop?

• Small AFO
  – Under 1000 AU
  – Below the NPDES permit size unless designated or direct contact or man-made discharge to water of US
  – May require state permit

• CAFO
  – 1000 or more AU
  – Required to have NPDES permit
Where’s the Poop?
AFO or CAFO

- Which size has the more operations?
- Which size has more animals/poop?
- Which size has more recoverable nutrients?
- Which size has more acres available for manure?
Where’s the Poop?
AFO or CAFO

- Who are your clients?
- What are their challenges?
- How do you reach them?
- Where is the greatest environmental risk?
- Where can you have the greatest impact?
Status and Trends in Small and Mid-Sized Animal Operations in the U.S.

Noel Gollehon
Economic Research Service, USDA
Presentation at the Workshop on Small and Mid-Sized Animal Operations and Water Quality
May 2, 2005
Linthicum Heights, Maryland
Numbers of farms, animals, & nutrients

Animal Farms

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Operations</th>
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</thead>
<tbody>
<tr>
<td>1982</td>
<td>1,400,000</td>
</tr>
<tr>
<td>1987</td>
<td>1,200,000</td>
</tr>
<tr>
<td>1992</td>
<td>1,000,000</td>
</tr>
<tr>
<td>1997</td>
<td>1,000,000</td>
</tr>
</tbody>
</table>

Source: Kellogg, et al., 2000
**Numbers of farms, animals, & nutrients**

![Bar chart](chart.png)

**Million Animal Units**

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Units</td>
<td>100</td>
<td>90</td>
<td>80</td>
<td>90</td>
</tr>
</tbody>
</table>

Source: Kellogg, et al., 2000
Non-confined animals: Farms and AU

Source: Kellogg, et al., 2000
Confined animals: Farms and AU

Source: Gollehon, et al., 2001
Recoverable Nitrogen

Recoverable Phosphorus

Source: Gollehon, et al., 2001
Confined animals: Farms with excess manure

Source: Gollehon, et al., 2001
AFO Challenges

• More than half of recoverable nutrients
• 98% of animal operations
  – Over 700,000 farms
  – 150,000 farms 300-1000 AU
• Largely under the radar
• Balancing carrots and sticks
  – Few sticks if unregulated
  – Cost-share carrots are costly to implement and discourage of some producers
AFO Take-home Points

• Nutrient planning essential
  – AFO’s with enough land need better utilization
  – AFO’s with excess nutrients need to plan beyond the farm borders

• Educational programs important
  – Too many to regulate
  – Technical assistance programs costly
Bang-for-the-Buck Programming

- Results in water quality improvement
- Not so detail as to discourage adoption
- The producer understands:
  - Greatest water quality risk factors
  - Nutrient value of manure
  - BMPs and simple strategies to address both
Are you going to lead or defend?