Biosolids/Septage: Phosphorus Impacts

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LANDSPREADING IMPACT

- **WISCONSIN**: ~9 Million Harvested Cropland Acres
- **Biosolids**: ~0.8%
- **Septage**: ~0.7%
- **Industrial Wastes**: ~3.7%
  - Total Non Animal Residuals ~5.5%
- **CAFOs**: ~10+%%
- **TOTAL Animal Waste**: ~50-60%
- **Comm Fertilizer Only**: ~35-45%
N vs. P REGULATIONS

N Regs
- Older Regs
- Clean Water Act Amendments (1987)
- 40 CFR 503
  - NR 204
  - NR 113
- Nitrogen NM planning
- Not enough

P Regs
- Soiltest P Upwards
- CAFOs
- NRCS 590 NM Plans
- Livestock Siting Ordinances
- Manure Storage Ordinances
- Cost Share
- WPDES Effluent Permits
- WHAT IS NEXT?
**BIOSOLIDS RATIOS**

**Ratios**

Crop Needs ≠ Biosolids
- Nitrogen
- Phosphorus

Biosolids Ratios
- Phosphorus ~5 times Nitrogen Needs

**Example**

- **Crop Needs**
- **Biosolids**

![Bar chart comparing Crop Needs and Biosolids with Nitrogen (N) and Phosphorus (P) categories.](chart.png)
BIOSOLIDS RATIOS

Solutions

- Apply at Crop P Needs every year
  - Add Commercial N

- Apply at Crop N Needs over a rotation
  - Manage around P

Apply Each Year

Apply Biosolids 1 Every 5 Years—4 years Commercial N
BIOSOLIDS UNKNOWN

- Total P ≠ Crop Available P
  - Iron/Aluminum Salts & Lime
- Changing rates of Iron/Alum Salts
- Each WWTP is unique
- Ratio of Total P added to Soil ≠ Incremental Soiltest P
- Many Others…as WWTPs attempt to reduce effluent P
SEPTAGE & P

• 1992 EPA Study
  ~165# of P if applied at 39,000 gal/ac
  ~100# of N @ 39,000 gal/ac

• NOW
  – ~35-40# of P @ 39,000 gal/ac
    • [Wis. Liq. Waste Carriers (Ebeling Study)]
  – ~60# of N @ 39,000 gal/ac

• More Characteristic INFO needed
TAKE HOME MESSAGES

• Soil Testing
  – Conduct Soil Tests
  – Understand Report
  – Increase testing to Annually
  – Monitor Trends

• Decrease Waste Loading
  – Replace Biosolids N w/Commercial N/Rotate
  – Know your waste
  – Avoid Animal Waste Sites

• SnapPlus Training
  – Talk the Talk
    • Nutrient Management Planners
    • Farmers/Producers
  – Walk the Walk
    • Manage around P
    • Use Commercial N
  – Calculate field risk
  – P-Index

• Other Benefits of NM
  – Improved Water Quality
  – Water Quality Trading Options
QUESTIONS

Get answers to your phosphorus questions by:

• Submitting your questions to the panel.
• Do it now...during the break