SAMPLING BEEF MANURE

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MANURE NUTRIENT VARIABILITY

• Nutrient concentrations will vary…
  • Less within a livestock operation than between livestock operations.
  • Between seasons of application
    • Fall vs. spring
  • From published book values
  • Based on sampling techniques

THINGS TO KEEP IN MIND WITH SAMPLING

• Sampling methods/requirements may be determined by state requirements so be sure to check with your local regulatory agency
• There are different philosophies on sampling
  • Sampling before application
  • Sampling during application

The archived presentation is available at:
https://articles.extension.org/pages/21819/chronological-webcast-archive
WHEN SHOULD SAMPLING BE DONE?

• Before application
  • Advantages
    • Results determine application rates
  • Disadvantages
    • Harder to get representative sample
    • Samples may not represent final manure nutrient content

WHEN SHOULD SAMPLING BE DONE?

• During loading and application
  • Advantages
    • More representative sample
    • Actual nutrient content
    • Easier!
  • Disadvantages
    • Turn around time on samples
    • What if rate is wrong?

HOW OFTEN SHOULD SAMPLES BE TAKEN?

• Sample often to get baseline values
• Then send in a separate series of samples:
  • Where or when a feeding system changes
  • Where or when scraping practice changes
  • Different manure storage/stockpiling systems
  • Different application seasons

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WHAT IS THE BEST WAY TO SAMPLE SOLID MANURE?

• Take a series of sub-samples and then mix well and split sample down to size required by lab
  • More is better but needs to be reasonable

WHAT IS THE BEST WAY TO SAMPLE SOLID MANURE?

• Try to be consistent in method from year to year
  • Write down procedure so results aren’t drastically different if someone else takes samples

HOW MANY SUBSAMPLES ARE NEEDED?

• Depends on how well the manure is mixed to reduce variability
HOW MANY SUBSAMPLES ARE NEEDED?

- Samples from 10 or more spreader loads
  - Grab from spreader
  - Put down tarp or pan

HOW MANY SUBSAMPLES ARE NEEDED?

- Fifteen or more places in a pile or windrow
  - Discard surface layer, sample at least 6” beneath

HOW MANY SUBSAMPLES ARE NEEDED?

- Scrapings from 20 places in open lots
WHAT ABOUT MANURE FROM CONFINED BARNs?

- Iowa State study found:
  - Sampling location didn’t make big difference
  - Pack, bedded pen apron, and stockpile were all similar

WHAT ABOUT MANURE FROM CONFINED BARNs?

- Iowa State study found:
  - Nutrient content varied by operation
    - Type of housing
    - Type of bedding
    - Pen density
    - Season
    - Type of feed
    - Housekeeping
    - Manure storage

WHAT ABOUT LIQUID MANURE FROM HOLDING PONDS?

- Take a series of sub-samples
- Try to get representative sample before pumping
- From pump during loading or pumping
SAMPLING LIQUID MANURE

Tape it, Double bag it, Refrigerate or freeze, Mail early in the week

MANURE TESTING: WHAT TO HAVE ANALYZED?

- Total nitrogen
- Ammonium nitrogen
  - Total N minus Ammonium N = Organic-N
- Nitrate-N is usually very low (except in some compost)
- Phosphorus
- Potassium
- Moisture

MANURE TESTING: WHAT TO HAVE ANALYZED?

- Zinc
- Sulfur
- Soluble Salts (Electrical Conductivity: EC)
  - For application to growing crops
  - For optimum lagoon functioning
  - Where soil or irrigation water is high in salt
- pH (lagoons)
MANURE TESTING FOR NUTRIENT CONTENT

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SUMMARY

- Good representative samples are the key to having a good analysis
- Sample enough to have confidence in results
- Use sampling protocol