

## **APPENDIX C**

### **Manure Analysis Procedures**

**(Manure Analysis Results)**

#### **Solid Manure (Dairy, Beef, Swine, Poultry)**

Collect a composite sample by following one of the procedures listed below. A method for mixing a composite sample is to pile the manure and then shovel from the outside to the inside of the pile until well mixed. Fill a one-gallon plastic heavy-duty zip lock bag approximately one-half full with the composite sample, squeeze out excess air, close and seal. Store sample in freezer if not delivered to the laboratory immediately.

**Procedure 1. Sampling while loading** - *Recommended method for sampling from a stack or bedded pack.* Take at least ten samples while loading several spreader loads and combine to form one composite sample. Thoroughly mix the composite sample and take an approximately one pound sub sample using a one-gallon plastic bag. *Sampling directly from a stack or bedded pack is not recommended.*

**Procedure 2. Sampling during spreading** - Spread a tarp in field and catch the manure from one pass. Sample from several locations and create a composite sample. Thoroughly mix the composite sample together and take a one-pound sub sample using a one-gallon plastic bag.

**Procedure 3. Sampling daily haul** - Place a five-gallon bucket under the barn cleaner 4-5 times while loading a spreader. Thoroughly mix the composite sample together and take a one-pound sub sample using a one-gallon plastic bag. Repeat sampling 2-3 times over a period of time and test separately to determine variability.

**Procedure 4. Sampling poultry in-house** - Collect 8-10 samples from throughout the house to the depth the litter will be removed. Samples near feeders and waterers may not be indicative of the entire house and sub samples taken near here should be proportionate to their space occupied in the whole house. Mix the samples well in a five-gallon pail and take a one-pound sub sample, place it in a one-gallon zip lock bag.

**Procedure 5. Sampling stockpiled litter** - Take ten sub samples from different locations around the pile at least 18 inches below the surface. Mix in a five-gallon pail and place a one-pound composite sample in a gallon zip lock bag.

#### **Liquid Manure - Dairy, Beef, Swine**

Obtain a composite following one of the procedures listed below and thoroughly mix. Using a plunger, an up-and-down action works well for mixing liquid manure in a five-gallon bucket. Fill a one-quart plastic bottle not more than three-quarters full with the composite sample. Store sample in freezer or refrigerator if not delivered to the lab immediately.

**Procedure 1.** Sampling from storage- Agitate storage facility thoroughly before sampling. Collect at least five samples from the storage facility or during loading using a five-gallon bucket. Place a sub sample of the composite sample in a one-quart plastic container. *Sampling a liquid manure storage facility without proper agitation (2-4 hrs. minimum) is not recommended due to nutrient stratification, which occurs in liquid systems. If manure is sampled from a lagoon that was not properly agitated, typically the nitrogen and potassium will be more concentrated in the top liquid, while the phosphorus will be more concentrated in the bottom solids.*

**Procedure 2.** Sampling during application- Place buckets around field to catch manure from spreader or irrigation equipment. Combine and mix samples into one composite sub sample in a one-quart plastic container.

**Procedure 3.** (Recommended for storage tanks). Use a round pip with a stopper to obtain a composite sample. Open the sampler (one left with the farm) and extend vertically into the pit slowly so air can be released and manure at each depth enters the sampler. After reaching the bottom of the pit/tank, close the sampler and remove. Place end of sampler into the sample bottle and release the stopper. Repeat as necessary to fill bottle about 2/3 full (~ 1 pint).

## **Sample Identification and Delivery**

Identify the sample container with information regarding the farm, animal species and date. This information should also be included on the sample information sheet along with application method, which is important in determining first year availability of nitrogen.

Keep all manure samples frozen until shipped or delivered to a laboratory. Ship early in the week (Mon.-Wed.) and avoid holidays and weekends.

## **Manure Analysis**

The minimum analysis for Illinois is to include:

- Total Nitrogen
- Ammonia Nitrogen
- Phosphorus
- Potassium

{insert manure lab analysis}