

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}



2/19/09

PO Box 340 • GRIDLEY, IL 61744
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Hill Crest

	1	2	3	4	ave
Lagoon water					
NH-N	5.3	5.3	5.2	5.2	$\frac{71.4}{4} = 7.6$
organic-N	9.9	8.2	6.6	5.8	$\frac{30.5}{4} = 7.6$
TKN	15.2	13.5	11.8	11.0	$\frac{51.5}{4} = 12.9$
					7.43
P ₂₀₅	1.7	1.6	1.7	1.6	1.65
K ₂₀	12.5	12.1	12.1	11.5	$\frac{48.2}{4} = 12.05$

Solids

NH ₃	2.4
organic	4.3
TKN	6.7
	3.36
P ₂₀₅	2.3
K ₂₀	4.9

Report Number

08-277-5076



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**MAURER-STUTZ INC
TERRY FELDMANN
7615 N HARKER DR
PEORIA IL 61615-**

Lab Number: 10013782
Description: HILLCREST DAIRY
ELMWOOD ILLINOIS
Sample Id: HC1

Report Date: Oct 03, 2008
Received Date: Oct 01, 2008
Sampled Date:
P.O. Number:

Account Number: 16078

Parameters	Analysis as Received	Nutrients lbs/ton	Est. First Year Availability lbs/ton
Ammonium Nitrogen(N)	0.12 %	2.4	1
Organic Nitrogen(N)	0.21 %	4.3	2
Total Nitrogen(N)	0.33 %	6.7	3
Phosphorus(P2O5)	0.11 %	2.3	2
Potassium(K2O)	0.25 %	4.9	4
Sulfur(S)	0.07 %	1.3	1
Calcium(Ca)	0.19 %	3.9	3
Magnesium(Mg)	0.06 %	1.1	1
Sodium(Na)	0.09 %	1.8	1
Copper(Cu)	3 ppm	0.01	0.00
Iron(Fe)	130 ppm	0.26	0.18
Manganese(Mn)	19 ppm	0.04	0.03
Zinc(Zn)	15 ppm	0.03	0.02
Moisture	78.7 %		
Total Solids	21.3 %	426.0	
Total Salts		14.1	
pH	9.4		

First year availability of nitrogen is calculated based on preplant application with incorporation within one day. Nitrogen available from previous years application not considered.

Total manure salts should not exceed 500 lbs/acre. Less than 500 lbs/acre if annual rainfall is less than 25 inches and/or the soil CEC is less than 12 meq/100g. Salt contributions from commercial fertilizer applications must also be considered. Soil test yearly to monitor phosphorus levels, organic matter, pH, and micronutrients. Spring soil test for residual nitrate - make accurate sidedress recommendations! Nitrogen availability will vary with methods of application and field conditions. The nitrogen availability values used on a manure management plan must comply with state regulation. These regulations vary from state to state.

Heather Ramig
Client Service Representative
heather@midwestlabs.com (402) 829-9891

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Report Number

08-315-5431



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**HILLCREST DAIRY
SAM DILSAVER
23318 W TAGGERT RD
ELMWOOD IL 61529**

Lab Number: 10015682
Description: LAGOON WATER FROM
DAIRY OPERATION
Sample Id: 3

Report Date: Nov 10, 2008
Received Date: Nov 06, 2008
Sampled Date:
P.O. Number:

Account Number: 21192
Copy To: (17585) ILLINOIS NUTRIENT PLANNERS

Parameters	Analysis as Received	Nutrients lbs/1000 gals	Est. First Year Availability lbs/1000 gals
Ammonium Nitrogen(N)	0.06 %	5.2	5
Organic Nitrogen(N)	0.08 %	6.6	2
Total Nitrogen(N)	0.14 %	11.8	8
Phosphorus(P2O5)	0.02 %	1.7	1
Potassium(K2O)	0.14 %	12.1	11
Sulfur(S)	0.01 %	0.6	0
Calcium(Ca)	0.04 %	3.2	2
Magnesium(Mg)	0.02 %	1.3	1
Sodium(Na)	0.05 %	4.6	3
Copper(Cu)	1 ppm	0.01	0.01
Iron(Fe)	9 ppm	0.08	0.05
Manganese(Mn)	3 ppm	0.03	0.02
Zinc(Zn)	3 ppm	0.03	0.02
Moisture	99.1 %		
Total Solids	0.9 %	76.1	
Total Salts		26.4	
pH	8.2		

First year availability of nitrogen is calculated based on preplant application with incorporation. Nitrogen available from previous years application not considered.

Total manure salts should not exceed 500 lbs/acre. Less than 500 lbs/acre if annual rainfall is less than 25 inches and/or the soil CEC is less than 12 meq/100g. Salt contributions from commercial fertilizer applications must also be considered. Soil test yearly to monitor phosphorus levels, organic matter, pH, and micronutrients. Spring soil test for residual nitrate - make accurate sidedress recommendations! Nitrogen availability will vary with methods of application and field conditions. The nitrogen availability values used on a manure management plan must comply with state regulation. These regulations vary from state to state.

John Menghini
Agronomist
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Report Number
08-315-5430



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**HILLCREST DAIRY
SAM DILSAVER
23318 W TAGGERT RD
ELMWOOD IL 61529**

Lab Number: 10015681
Description: LAGOON WATER FROM
DAIRY OPERATION
Sample Id: 2

Report Date: Nov 10, 2008
Received Date: Nov 06, 2008
Sampled Date:
P.O. Number:

Account Number: 21192
Copy To: (17585) ILLINOIS NUTRIENT PLANNERS

Parameters	Analysis as Received	Nutrients lbs/1000 gals	Est. First Year Availability lbs/1000 gals
Ammonium Nitrogen(N)	0.06 %	5.3	5
Organic Nitrogen(N)	0.10 %	8.2	3
Total Nitrogen(N)	0.16 %	13.5	8
Phosphorus(P2O5)	0.02 %	1.6	1
Potassium(K2O)	0.14 %	12.1	11
Sulfur(S)	0.01 %	0.6	0
Calcium(Ca)	0.04 %	3.0	2
Magnesium(Mg)	0.01 %	1.2	1
Sodium(Na)	0.05 %	4.4	3
Copper(Cu)	1 ppm	0.01	0.01
Iron(Fe)	9 ppm	0.08	0.05
Manganese(Mn)	3 ppm	0.03	0.02
Zinc(Zn)	3 ppm	0.03	0.02
Moisture	99.2 %		
Total Solids	0.8 %	67.6	
Total Salts		26.0	
pH	8.2		

First year availability of nitrogen is calculated based on preplant application with incorporation. Nitrogen available from previous years application not considered.

Total manure salts should not exceed 500 lbs/acre. Less than 500 lbs/acre if annual rainfall is less than 25 inches and/or the soil CEC is less than 12 meq/100g. Salt contributions from commercial fertilizer applications must also be considered. Soil test yearly to monitor phosphorus levels, organic matter, pH, and micronutrients. Spring soil test for residual nitrate - make accurate sidedress recommendations! Nitrogen availability will vary with methods of application and field conditions. The nitrogen availability values used on a manure management plan must comply with state regulation. These regulations vary from state to state.

A handwritten signature in black ink, appearing to read "John Menghini", written over a horizontal line.

John Menghini
Agronomist
jp@midwestlabs.com (402)829-9889

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