

Compost Sampling Guideline

Dairy Compost Utilization

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The sampling of compost is an essential aspect of process monitoring, quality control, marketing, labeling of product and regulatory compliance. This sampling guide should be used to assess the quality of a finished product. By following these guidelines, the compost facility initiates the first step in participating in the US Composting Council's *Seal of Testing Assurance Program* ("STA").

Please consult *Test Methods for the Examination of Composting and Compost*, Method 02.01-B online at <http://tmecc.org/tmecc/> for original information related to this sampling guideline.

MATERIALS

- ◆ Front-end loader
- ◆ 15 cup-size compost samples per cut
- ◆ Sterilized sampling tool or glove
- ◆ Sterilized collection bucket(s) for cut areas
- ◆ 2, 5-gal sterilized mixing pails
- ◆ 2, 1-gal sample storage containers, (e.g., resealable plastic containers)
- ◆ 5% bleach solution
- ◆ Aluminum foil
- ◆ Newspaper, Butcher or Kraft paper
- ◆ Rigid shipping container, (e.g., cardboard box, etc.)
- ◆ Frozen ice packs
- ◆ Packing tape

WHAT TO SAMPLE

TMECC Method 02.01-B describes composite sampling to assess in-process compost and finished compost product. However, this sample guideline addresses the procedure for sampling a finished product.

A composite sample is a single sample composed of multiple, well-blended subsamples that, after thorough mixing, represents the traits of interest for an entire pile or windrow.

Select a screened pile or a finished windrow waiting to be screened. Avoid sampling from

areas that are excessively wet, i.e., greater than about 60% moisture.

WHERE TO SAMPLE

Using a front-end loader, cut into the pile or windrow in at least 5 locations (figure 1). The 5 cuts must be randomly assigned and may be selected from either side of the windrow or pile. Cut into the entire depth of the pile and at least into half of the width of the pile. The cut should expose the middle of the pile from its natural base to its natural peak.

Take all necessary precautions that the walls of each cut are stable to prevent the potential for collapse. Also, make certain the sampling area is well ventilated to avoid exposure to potentially harmful gases.

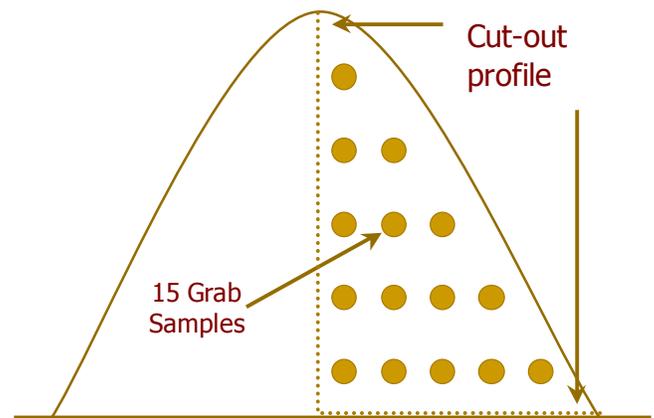


Figure 1. Cross-sectional illustration of one cut-out from an inverted "V" compost windrow. Circles represent 15 uniformly dispersed grab samples. Avoid collection of samples from pile or windrow surfaces.

HOW TO SAMPLE

Collect 15 uniformly dispersed 1-cup samples from within one side of each of the 5 cut areas as illustrated in figure 1. Combine and thoroughly mix the 15 grab samples in the sterilized collection bucket. Repeat this process for each cut area.

In the 2 sterilized 5-gal mixing pails, combine all samples from the 5 cuts and thoroughly mix to make one composite sample. If balls form when mixing, the compost is too wet and should be partially air-dried prior to further mixing. Sample integrity is diminished and nitrogen loss should be anticipated when a sample is air-dried prior to shipping.

Quarter the composite sample by repeatedly dividing it in half until you have a 2-gal sample. Gently transfer the 2-gal sample into the 2 1-gal plastic resealable storage containers. Do not compact the compost samples.

SANITATION PROCEDURES

Use a sterilized sampling tool and collection bucket made of stainless steel, plastic, glass or Teflon® to avoid sample contamination. Sterilize all sampling equipment before sampling and between different windrows or piles. To sterilize, wash sampling tools with soap and water, rinse with 5% bleach solution and then triple rinse with fresh water.

Wear appropriate protective clothing and use care when handling bleach or any other chemicals.

SAMPLE PRESERVATION

After packaging samples in 1-gal containers, chill them to about 4°C (39°F). Separately wrap each chilled sample container together with an ice pack, using multiple layers of newspaper, butcher or kraft paper. Line the inside of a rigid shipping container and its lid with aluminum foil.

The paper and foil will help to insulate the shipping container. Place wrapped samples in the shipping container, filling voids between the sample containers and shipping container walls and lid with crumpled newspaper, butcher or kraft paper. Seal the lid on the shipping container with packing tape. Send the shipping container by 1-day delivery to your selected laboratory for analysis.

Laboratories that follow TMECC protocols must be approved through the

STA program. A list of participating laboratories is available online at <http://tmecc.org/sta/>

WHEN TO SAMPLE

This is an end-process sampling so only material that is ready for market should be tested. According to STA program requirements, sampling frequency should be based on a facility's production capacity.

- 1 to 6,250 tons – sample once per quarter
- 6,250 tons to 17,500 tons – sample once per 2 months
- 17,500 tons and above – sample once per month

7 Steps to Compost Sampling

1. Select 5 areas of sample pile and cut into pile
2. Take 15 uniformly dispersed 1-cup samples from each of 5 cut areas
3. Thoroughly mix 15 grab samples from each cut together
4. Blend all samples to form 1 composite sample
5. Quarter the composite sample to 2-gal for testing
6. Cool 2-gal sample to 39°F
7. Package samples and ship by 1-day delivery to selected STA-approved laboratory for analysis.

For more information concerning the Marketing Dairy Compost project or the STA program, please contact Cecilia Gerngross by email (cecilia@tamu.edu) or phone (979.458.1138).