

COMPOSTING

BIODRYING DAIRY MANURE

Mar-Bil Farms, Bovina Center, Delaware County

RESULTS

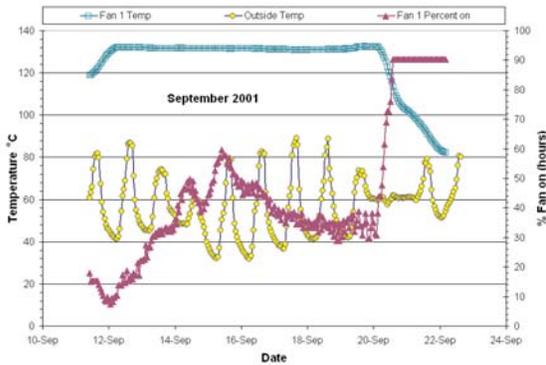
The top graph to the left shows a four foot deep pile that was composed of fresh manure from the dairy barn, alfalfa hay, unfinished composted manure and moldy corn silage. The mixture had an initial moisture content of 70% and a final moisture content of 40%. The performance of this pile was exactly as anticipated. The warm fall temperatures and low humidity for this time period may have contributed to the drying and excellent performance of this composting pile. The four-foot depth allowed the pile to reach high temperatures while still allowing the fans to control the temperatures of the pile. Air-drying allowed the moisture on the top few inches of the pile to be removed so no wet layer was present at the finish of the pile. The corn silage amendment may have given the pile more energy and porosity so airflow was maintained throughout the entire pile. This was the most successful run achieved with the composting process in this system.

The graph to the left shows how the density of the composting mix changes over time. The increase in density over time is the result of the compost mix settling. Settling occurs as the pile is dried and the microbes start to break down the fibers, as well as to gravity.

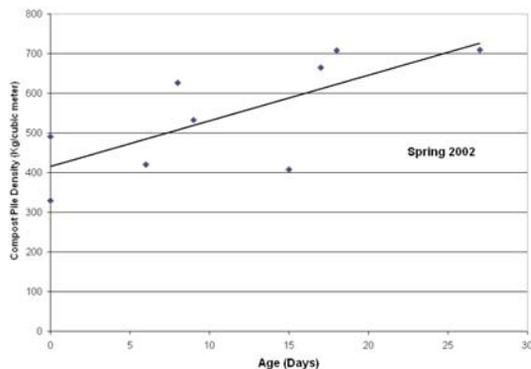
The increase in density also represents a decrease in the airspace in the pile. The decrease in airspace effectively makes it harder for air to move through the compost mix. Thus settling increases the static pressure needed to properly aerate the compost mix. The aeration fans have had difficulty in the past properly aerating the pile because of the increased density and corresponding increase in static pressure of the composting mix as the pile ages.

LESSONS LEARNED

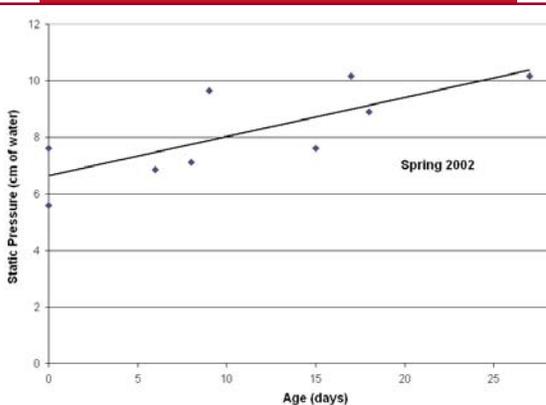
To compost successfully, the piles of manure and recycled compost should be under 4 ft. high and have an initial moisture content of 60%. After 21 days the moisture of the compost will drop to 40%, and the material should be ready to be recycled as amendment to add to fresh manure.



Temperature during a successful composting run with good fan control and drying.



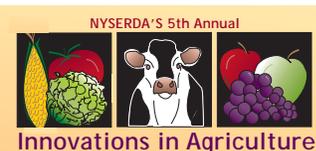
Density increases in compost mix as settling occurs over time.



Static air pressure increases with compost age.

CORNELL

PRO-DAIRY



NYSERDA