University of Massachusetts
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Evaluation of Compost for Erosion and Sedimentation Control

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16. Abstract
It is important to prevent sediment contained in construction site runoff, such as highway construction, from flowing offsite, where it can contaminate wetlands and other receiving waters. Hay bales and silt fences are commonly used as a sedimentation control measure around the perimeter of roadways undergoing construction. Hay bales and silt fence are MassHighway standard practice for sedimentation control. Although hay bales and silt fence are typical practice for erosion control, research suggests that compost application, in the form of blanket or berm applications, may perform better for both control of erosion and sedimentation.

The purpose of this research is to determine the environmental acceptability of wood wastes and composted materials from various sources throughout Massachusetts to control erosion. Nutrient analytes consisted of total organic carbon, total nitrogen, and total phosphorus. Chemical analytes included nitrate, nitrite, and ammonia. Biological analytes included enterococci and E. coli. The total suspended solids and pH were also measured. Further assessment included a statistical analysis of replicate sample data to ensure repeatability of methodology. Forty total samples were collected. Synthetic precipitation was passed through each sample and the effluent was collected at various time intervals for analysis.

Overall, concentrations decreased with leaching time, and hay samples were generally higher than compost samples in all categories. It is significant to mention that the average compost nitrogen-carbon ratio was 1:10, typical for plant organic material. Unlike compost, hay samples supported significant amounts of microbial re-growth. The compost leachate was more buffered than the hay leachate. Replicate sample data for both TOC and TN are supportive of repeatability in test methodology.

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