

## BOOSTING COMPOST MARKETS

# IOWA STUDIES WAYS TO CONTROL HIGHWAY EROSION

*University team  
and state  
agencies conduct  
research to  
provide  
quantitative data  
on how compost  
use improves  
water quality.*

*Shelly Codner*

**E**ROSION during and after road construction creates large amounts of silt, which deteriorates water quality and causes ecological problems. Iowa agencies continue to conduct studies to verify the value of compost as an economical way to prevent runoff along the state's 100,000 miles of roadway. Next month will begin the second half of a two-year research project that involves the Iowa Department of Transportation (DOT), Iowa Department of Natural Resources (DNR), and Iowa State University (ISU).

An overpass near Story City (ten miles north of ISU) provides a representative 3:1 test slope for the project. "Compost is generally credited with improving the growth of roadside vegetation," notes Tom Glanville of the ISU Agricultural and Biosystems Engineering Department, who drafted the research proposal. "However, few scientific studies obtaining quantitative data of erosion or water quality have been reported."

DNR staff had served as the liaison among project stakeholders, since the Iowa Code specifies a preference for compost use in road maintenance activities by local and state governments. DOT and DNR are jointly funding the \$188,000 study being performed by the ISU research team. Three composting facilities in Iowa — Bluestem Solid Waste Agency (Cedar Rapids), Davenport Composting Facility (Davenport) and Metro Waste Authority (Des Moines) — donated up to 20 cubic yards each of finished product.

### IMPACT OF RESEARCH ON COMPOST MARKETS

Continued research into compost use for erosion control applications is expected to stimulate market growth and increase diversion of the 900,000 tons of organics still being landfilled in Iowa each year. "This is a potentially large market for compost," says Jeff Geerts of DNR's Waste Management Assistance Division. "I heard that DOT has specified the use of about 2,000 more tons of compost on a construction site near

Williamsburg. This would probably not have happened had we not gone through this initial process."

The erosion control study at Story City is examining the impact of applied compost on rill and interrill erosion. During heavy rains, water flow cuts into the soil's surface and results in soil indentations or rills. Interrill or sheet erosion is almost invisible and is caused by the impact of rain sheeting across the soil's surface. In April, 2000, rill and interrill test plots were established for treatments using a randomized block design. Rill plots measuring three by 26 feet and interrill plots measuring four by five feet were treated with each of the three composts at depths of two inches, four inches and six inches. A topsoil treatment at a depth of six inches and a compacted subsoil treatment also were placed on the slope as a control to replicate DOT specifications. Compost was applied using a tractor equipped with a front-end loader, then manually moved up the slope by the research team.

Each treatment was replicated at least six times for both rill and interrill plots. Half of the replications were used to evaluate erosion and water quality data on bare plots, and the remainder were seeded according to DOT specifications. Dried vegetation samples were weighed to quantify biomass and will be used to analyze the visible growth patterns that appeared among the compost treatments.

### VIABLE ALTERNATIVE

All samples collected during the first year are being analyzed, and field observations made by the project research team are encouraging. While bare plots and control plots experienced runoff immediately following rainfall, compost treatments at all depths appeared to absorb water — two inches or more — before runoff was initiated. Volunteer vegetation appeared to be inhibited on seeded plots treated with compost. The foliage displayed strong root penetration into the underlying subsoil. Improved turf establishment along road right of ways (from the roadway to the ditch) will reduce additional equipment and labor costs associated with reseeding.

Members of the research team anticipate that quantitative data from the study will substantiate compost use as a viable alternative to conventional erosion control methods, as well as a high quality soil amendment in the establishment of erosion control vegetation buffers. PRO-Iowa (Promoting Recycled Organics in Iowa) members believe the study also assists in educating the public about the benefits of quality soil amendments. "Most of us travel Iowa's roadways on a daily basis. Public project sites similar to this will increase awareness among residents and stimulate education in soil structure and the importance of quality soil amendments," states Stacie Johnson, Pro-Iowa member and owner of Organic Matters in Robins, Iowa. "Education is the key to creating a sustainable compost market within the state." ■

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