



Byproduct of novel waste treatment system promotes plant growth

by Ryan Busby and Dick Gebhart

Researchers at the Engineer Research and Development Center (ERDC) are evaluating a new waste reduction technology that could one day not only replace landfills, but help restore damaged training lands as well. The WastAway Recycling System, developed by Bouldin Corp., grinds up municipal solid waste, sterilizes and breaks down organic molecules with high temperature and pressure steam, and separates the organic fraction, called "fluff," from the recyclable glasses, metals, and plastics.

Like composted garbage, this fluff could potentially be used as a soil amendment to increase organic matter and encourage plant growth. With Army training lands in constant need of rehabilitation, there is a great demand for such material. The main advantage this process has over composting is the lesser amount of time it

ment of Agriculture - Agricultural Research Service's (USDA-ARS) National Soil Dynamics Laboratory and the USDA-ARS Grassland Soil and Water Research Laboratory.

After an exhaustive analysis of almost 200 organic contaminants and heavy metals and an initial germination test using native grasses, the fluff was found to be suitable for performing field trials at the installation level. Native prairie grasses were selected for testing the material, as they are well adapted to nutrient-poor environments, widely used in land rehabilitation efforts across the country, and occur naturally in many states.

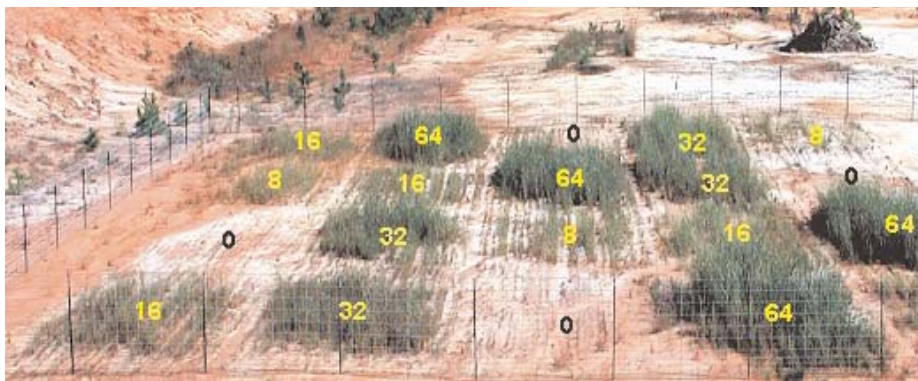
The Fort Campbell study was conducted during 2001-2003 using application rates up to 16 tons of fluff per acre. Plant species composition, cover, biomass, and soil physical and chemical analyses were performed



BouldinCorp's WastAway Recycling System.



Organic material, or fluff, produced by the WastAway System.



takes to generate a safe, usable product. With compost, 3-6 months are generally required, which usually limits the capacity of compost facilities. In contrast, the WastAway system takes about one hour to turn garbage into useful material.

ERDC's Construction Engineering Research Laboratory (CERL) conducted two studies to evaluate fluff as a soil amendment. These studies coincided with technology demonstrations at Forts Campbell, Kentucky, and Benning, Georgia, as part of CERL's large-scale demonstration and validation effort. Partners in the soil evaluation projects were the U.S. Depart-

ment of Agriculture - Agricultural Research Service's (USDA-ARS) National Soil Dynamics Laboratory and the USDA-ARS Grassland Soil and Water Research Laboratory. for two growing seasons. Native grass cover increased with increasing fluff application, but no differences were found in soil properties, including heavy metal and nutrient concentrations, pH, and bulk density.

Because few differences were found, rates were quadrupled in the Fort Benning study to 64 tons/acre in an attempt to determine an upper limit to application of the material. However, that was not found. After the first year of the study, the 64 tons/acre plots showed a 91% increase in total vegetative cover, a 97% increase in native grass cover, and a 208% increase in plant biomass compared to unamended plots.

These evaluations indicate that the material is well suited for returning organic matter to soils on degraded training lands, which is a necessary step in reestablishing productivity. It was also found that large amounts of this material can safely be land-applied, further enhancing its usefulness as a large-scale waste disposal alternative.

Warren County, Tennessee, is the only municipality in the United States currently using the WastAway System. This site is achieving a 95% recycling rate, with the bulk of the fluff used for horticultural purposes.

For more information about the soil amendment studies, please contact Ryan Busby at CERL, 800-872-2385, ext. 7508, email: r-busby@cecer.army.mil.

For information about the WastAway demonstrations, please contact Deborah Curtin at 217-398-5587. Related articles are posted on the CERL website, www.cecer.army.mil.

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