

Trash or Cash Commodity? It's All in the Blend

Johnny Henderson, mayor of Enterprise, Alabama, says his town generates 20 to 30 tons of yard waste a day and charges property owners \$17 a ton to take it to a landfill. Believing it would be smarter to sell or even give away the yard waste, Henderson turned to James H. Edwards, Jr., for help.

A soil scientist with ARS' National Soil Dynamics Laboratory at Auburn, Alabama, Edwards has spent the past several years finding ways to use different combinations of yard waste, paper, poultry litter, and other waste materials to grow crops—often with higher yields and at less cost, both environmentally and economically.

Two years ago, in response to Henderson's pleas for help, Edwards started a study of ways to safely apply composted yard waste to farmland around Enterprise. Many of the soils in the Southeast, as well as in other parts of the country, are low in organic matter that the yard waste can help supply.

Waste materials tend to concentrate in one spot—a landfill, chicken farm, wastewater treatment plant, or factory storage area. Usually these materials have a value so low people have to pay for disposal. Transporting them farther away to sell where they are needed may not be economically feasible.

But if you blend two or more of these waste materials together in the right way, the product may have enough value to warrant shipping. The way Edwards and his ARS colleagues Ron Korcak and Larry Sikora in Beltsville, Maryland, see it, these products could be natural substitutes for pesticides, mulches, fertilizers, and other soil amendments needed by farmers, landscapers, and gardeners.

In their vision, farmers near urban areas would compost various wastes and charge cities less than landfill fees, while providing compost for city dwellers. They could also take in waste from other farmers and return it to them as compost for a fee.

Of course, farmers could also use the compost themselves, reducing the costs of inputs to their production systems. And if enough value were added, they or recycling industries could sell the products beyond the

drywall from construction sites, residues washed from cement trucks, waste from crab processing plants, and ash from coal-fired electric power plants.

They will also use the facility to explore whether microbes can be added to compost that will promote plant growth and aid in preventing plant disease.

Korcak is experimenting with turning the ton of drywall scraps cut away to finish the inside walls of the average home into a soil additive that will help grow a new lawn around it.

As one possibility, he and Peter Yost, who is with the National Homebuilders' Research Center in Upper Marlboro, Maryland, see construction workers using a portable machine to pulverize drywall and wood scraps on site. These pulverized materials would be mixed with fertilizer into the topsoil, rather than carted off to a landfill. The Gypsum Association of Washington, D.C., is funding the drywall part of

the project.

Or the drywall and wood scraps could be brought to a central composting facility for blending with the scraps of other enterprises, adding more value.

Yost sees land application as one of the most promising ways to accommodate the large volume of drywall trimmed away to make the walls of many homes in America. Wood and drywall scraps are the two most abundant wastes at construction sites.

Yost calls drywall scraps a commodity, while Korcak and his colleagues call their materials resources. Instead of "waste" or "scraps," they see inexpensive ingredients for commodities that can enrich both soils and wallets.

PETER YOST, NAHB, INC.



Around a ton of gypsum wallboard waste is generated in building an average home.

region where the wastes were initially generated.

Composting Gypsum Drywall and Wood Scraps

This month, the U.S. Department of Agriculture is opening a model composting facility at the 7,000-acre Beltsville Agricultural Research Center (BARC) near Washington, D.C. It will mainly handle manure and other wastes such as potting soil and plants. It will also have an area set aside for research to find out which blends of materials make the best compost. In addition to farm and yard waste, the BARC scientists will test materials such as scrap wood and

Compost Pellets for Easy Handling

Soon your home fertilizer spreader may be spitting out old newspapers and telephone books—in pellet form.

Edwards has signed a cooperative research and development agreement with a recycling firm, Tascon, Inc., of Houston, Texas, to make the pellets and other products for farm

(A) and garden use.

Tascon president Jim Adamoli says he is already selling recycled paper mulch for flower gardens in both shredded form and as pellets.

The paper can be spread by hand on a flowerbed, like pine bark mulch, or incorporated into the soil with a home or farm fertilizer dispenser.

For use as a fertilizer, Tascon fortifies the paper with poultry manure, heats the mixture to 160°F to kill possible pathogens, and then extrudes it as pellets.

Adamoli has his eye on setting up plants in rural areas around the country. Alabama is one of the states he is considering, because its poultry and horticultural industries provide natural markets for the recycled paper as bedding and mulch.

For the past 4 years, Edwards has tested shredded newspaper and telephone books on corn, soybeans, cotton, tomatoes, collards, and other vegetables. When mixed in compacted soil, he found the paper loosens the soil and

improves yields of corn, soybeans, and cotton. He has worked with farmers in Texas, using large pellets as a surface mulch to keep bare soil

from blowing away. [See “Trash to Treasure: Recycling Waste Paper,” *Agricultural Research*, October 1993, pp. 18-21.]

Adamoli makes the pellets in various sizes. But to fit home fertilizer dispensers, he makes them the size of a fertilizer pellet: 3/16 inch diameter by 1 inch long. He also plans to break up the pellets for use as livestock bedding. He and Edwards are testing the bedding in five poultry houses in Alabama.

The paper pellets form a soft bedding that is easier on a chick’s tender breast and feet than aged sawdust or other bedding material. Farmers report they like the bedding better and that it does a better job of absorbing urine and ammonia fumes.

“These pellets fluff up when they get wet and absorb 4 to 5 times their weight in water,” Edwards says.

Tascon could contract with poultry houses to sell them fresh bedding and later buy it back, used, with manure applied by the

chickens. Tascon is looking at making the paper-manure pellets into a potting mix and “peat pots” for transplants. Edwards and Tascon personnel are now testing the potting mix on greenhouse snapdragons, impatiens, pansies, and field ornamentals.

The manure, a nitrogen source, would help the paper waste decompose and turn into compost. Lawn clippings and other yard and food wastes are candidate nitrogen sources for decomposition, Edwards says.

However it is applied, the paper-manure mix improves soil quality at least as much as manure alone, with less of an accompanying risk of nitrate/nitrogen leaching from the manure to groundwater.

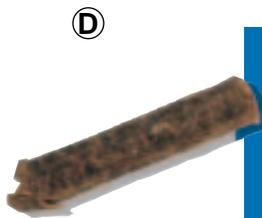
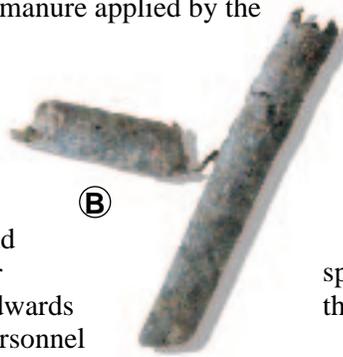
And Edwards’ experiments are increasingly convincing him that something in waste paper has herbicidal qualities, controlling weeds such as crabgrass better than commercial herbicides. That makes the paper peat pots especially appealing to the horticultural industry. For if the herbicide could be incorporated into the pot itself, the industry would save the waste and hazard involved in trying to

spray potted plants without hitting the spaces between pots.

Edwards is also finding that the mixture shifts the balance of soil microbes towards the types that increase plant health and yield and suppress many plant disease-causing organisms.—By **Don Comis**, ARS.

James H. Edwards, Jr., is at the USDA-ARS National Soil Dynamics Laboratory, P.O. Box 3439, Auburn, AL 36831-3439; phone (205) 844-3979, fax (205) 844-3945.

Ronald F. Korcak, USDA-ARS Fruit Laboratory, 10300 Baltimore Ave., Beltsville, MD 20705-2350; phone (301) 504-5650, fax (301) 504-5062. ♦



- A. Medium pellets developed as testing material.
- B. Small pellets for landscape mulch.
- C. Large pellets for erosion control.
- D. Small pellets with pigment added for more attractive landscape mulch. (K7308-20)