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Solid Waste and Emergency Response (5306)



Summary of Markets for Compost



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Recycling, along with waste prevention, combustion, and disposal in landfills, is a key component of an integrated municipal solid waste management strategy. (The word *recycling* as used throughout this booklet encompasses composting as a form of recycling.) Recycling may consist of several steps, including collection, separation, processing, remanufacture, and marketing. A material is not considered “recycled” until *all* of these steps are completed and the “recycling loop” is closed.

Since materials must be converted into products and used by consumers to close the recycling loop, understanding the markets for recyclable materials and for goods manufactured from recyclable materials is key to continued and expanded recycling. Markets for recyclable materials, like all markets, are influenced by the laws of supply and demand. As more and more communities across the nation implement recycling programs and more recyclable materials enter the marketplace, both supply and demand are affected.

The U.S. Environmental Protection Agency (EPA) is supporting market development by promoting the government purchase of goods containing recycled materials; providing assistance to local governments; and researching, developing, and evaluating policy options.

This booklet summarizes EPA’s *Markets for Compost*. It describes factors affecting the current supply and demand for compost, and provides information on future market trends. It also explains how to obtain a copy of the full report.



Composting is a biological process of stabilizing organic matter under controlled conditions into a product that is rich in humus and provides organic matter and nutrients to the soil. Composting converts yard trimmings, food scraps, and/or nonrecyclable paper into useful products, thereby diverting them from disposal in landfills or combustion facilities.

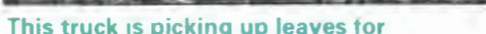
Yard trimmings include grass clippings, leaves, brush, and tree prunings. While the amount of yard trimmings generated nationwide fluctuates by

the



The entire compostable portion of

As of the end of 1991, eighteen MSWL



There are two main approaches to MSW composting: 1) compostable materials may be segregated from discards at the point of generation and then processed; or 2) the entire MSW stream may be processed without separation at the point of generation, but rather at the composting facility with varying degrees of effectiveness. That is, noncompostable materials are usually removed either before or after the composting process. The two approaches will vary in terms of cost, equipment needed for collection and processing, marketability of the compost, and value both of the compost produced and any recyclables that may be recovered.



Factors Affecting Supply

Compost supply is influenced by several factors. Landfill and combustor capacity pressures and high disposal fees have helped stimulate many composting programs. Several states have banned yard trimmings from disposal in landfills because these materials would occupy valuable landfill space. In addition, as yard trimmings and other organic



Composting often involves the construction of elongated piles called windrows.



Some municipalities collect yard trimmings at the curb in paper bags like the ones shown here. Paper bags can withstand rain and snow, and decompose, along with the yard trimmings, during the composting process.

materials decompose in landfills, they contribute to the release of methane gas and acidic leachate and uneven settling. Combustion is generally not a desirable method to manage yard trimmings due to their high moisture content, which inhibits complete burning and results in very little net usable energy for power or steam generation. When burned, yard trimmings also emit nitrogen oxide and carbon dioxide gases.

Failure to identify and understand potential markets for compost can result in either over- or under-producing compost. If this happens, suppliers may end up creating stockpiles of compost or may not be able to satisfy demand. To help ensure the availability of compost, suppliers can identify markets before com-

posting operations begin and adjust compost production accordingly.



The supply of compost produced from yard trimmings is expected to increase in the future. The long-term supply of MSW compost is uncertain because existing facilities have not been operating long enough to make accurate forecasts. Until more MSW composting facilities come into operation, MSW compost availability will continue to be limited.



Demand for Compost

Compost is a valuable soil amendment that improves many soil properties, such as porosity, structural and thermal stability, water retention, resistance to wind and water erosion, and tillage. Compost also decreases soil crusting, regulates storage and release of nutrients, enhances the development of beneficial microorganisms, builds up

plant resistance to parasites and disease, and promotes faster root development. Plants and crops treated properly with compost may produce higher yields and have less weed growth.

Because of these beneficial characteristics, five major market segments for compost have been identified:

- Agriculture (for food and nonfood crops and sod farms).
- Landscapers (for industrial and commercial properties; golf courses, cemeteries, and athletic fields; landfill covers; and damaged soils).



Compost piles are periodically turned and monitored to ensure proper oxygen, temperature, and moisture levels.

- Nurseries (for plant and forest seedling crops and reforestation projects).
- Public agencies (for highway median strips, parks, recreational areas, and other public property).
- Residents (for home landscaping and gardening).

The different market segments require different grades of compost. For example, high-grade compost is needed for horticulture while lower grade compost may be suitable for landfill cover.



Factors Affecting Demand

Product quality and consistency generally are considered to be the most important factors affecting the demand for compost. High-quality, mature compost has a dark color, uniform particle size, and a pleasant earthy odor. It should not contain visually identifiable contaminants (such as bits of glass,

metal, and plastic). In addition, the compost should contain minimal levels of chemical residues, heavy metals (such as cadmium, lead, and mercury), herbicides, pesticides, and other potential toxics. The compost also should have a high concentration of organic matter, contain nutrients, be free from pathogenic organisms, and contain no viable weed seeds.

While product quality is very important to the marketability of compost, uniform specifications have not been developed for compost. This lack of standards fosters skepticism in some potential compost users. Agricultural users are among the most hesitant to use MSW compost, which they fear contains unsafe levels of heavy metals and other contaminants that can damage crops. Heavy metals, herbicides, pesticides, and other potential toxics, however, are generally not a concern with composted yard trimmings.

Specifications could be established for various parameters, including organic matter content, size distribution (particle size), nutrient content, potentially toxic compound concentrations, nontoxic contaminant levels, weed seed concentrations, seed germination and elongation, soluble salts, ratio of



Mature compost has a dark color and uniform particle size.

available carbon-to-nitrogen, and pH. Standard laboratory procedures have not been established for testing compost. This lack of standards also may steer some potential users away from compost.

Another factor that affects demand is the availability of compost compared to its competing and complementary products in the marketplace. In some cases, compost availability may currently be inadequate, but there are many available competing and complementary products on the market, including fill dirt, topsoils, riverbottom silt, potting soils, custom soil mixes, bark mulch and wood chips, manure, peat moss, mushroom compost, perlite, and vermiculite. Many of these products have a long history of consistency, availability, reliability, acceptance, and use in agriculture, horticulture, public and private landscaping projects, and residential gardening.

Distance also is a factor affecting demand. Proximity to composting facilities promotes product acceptance and recognition. Thus, a potential user is more likely to know of a product that is produced nearby, rather than one produced many miles away. In addition, if the composting facility is located a long distance from compost markets (e.g., more than 50 miles away), the compost may have to be transported by rail or ship. Shipping costs, however, might exceed the value of compost, which may already be low. Various strategies can be employed to mitigate high transportation costs, including developing local markets for compost and backhauling compost in cleaned, otherwise empty departing trucks (especially in the case of dropping off yard trimmings and hauling back compost), establishing a network of distribution centers that each maintain an adequate inventory, and locating composting facilities near the primary compost users' sites.



Homeowners can use compost as a soil amendment in their gardens.



Future Trends in Demand

The agriculture industry is the largest potential market for compost, although it is also the most difficult to penetrate. To increase the use of compost by this industry, the compost must be available at the appropriate time of year, consistent in composition and nutrient content, contain low levels of potentially toxic substances, be offered at a low cost,

and be accepted by farmers. Landscapers use large amounts of soil amendments and are therefore a potentially large user of compost. However, landscapers have expressed concern that compost may contain harmful amounts of viable seeds, herbicides, and pesticides. Making available to landscapers results of laboratory tests demonstrating the safety of compost made from yard trimmings should ease these concerns. The potential for the nursery industry to use compost in the future greatly depends on the economy and housing industry. If home sales rise,

the demand for nursery products is likely to increase as well. Public agencies also have the potential to use large amounts of both high-quality and low-quality compost in landscaping, land maintenance, land reclamation, and other projects. In addition, the residential segment represents a substantial market for soil amendments. The amount of compost this segment will use depends on the ability of suppliers to consistently produce a quality product at a reasonable cost.

Market Report Availability

A copy of the full report, *Markets for Compost*, is available from the federal government's National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161, (703) 487-4650.

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