

Compost, made from animal manure or plant waste, has been used for years in the landscape industry and by gardeners. This fact may cause many in the industry to think compost is unsophisticated, outdated, or technologically less effective than modern chemicals. Actually, the benefits of compost for turf and landscape are being rediscovered by the Green Industry as if it was a new idea.

Compost is a product we should all be familiar with and use as a regular tool. Today, compost is being made from sewage sludge and it's becoming available in certain cities within the United States; it provides many benefits to those who use this product within their industries. Clients also benefit.

Large scale composting

In the late 1960s Stanley Bulpitt of Darien, CT, began large scale composting of leaves. This eliminated a municipal leaf disposal problem and, at the same time, provided an outstanding humus which was used to enhance greenhouse and prepared soil mixes.

Bulpitt has long recognized the value of leaf mold compost and he's used it in his commercial operations.

In the early 70's, the United States Government, the state of Maryland, and the Washington Suburban Sanitary Commission realized there was a growing problem with sludge disposal within the United States and simultaneously decided to investigate composting as the answer to this problem. To this end, they committed millions of dollars to determine whether a composting process was applicable and whether it would be a process that could work throughout the United States.

Over a five to seven year period, the **Beltsville Process**, as it was named, was developed. This process met the criteria that had been established at the beginning of the program, i.e., it would use large amounts of sludge as a raw material, would produce a high quality product, and could be done almost anywhere in the United States. It was a large scale process that was practical, safe and reliable.

The compost made from this pro-

cess has many potential applications; in short, the Beltsville Process solved many problems.

After the Beltsville method was established, the United States Department of Agriculture, and the University of Maryland spent several years in determining that sewage sludge compost was suitable for a variety of horticultural applications, including greenhouse work. One outcome of the work was a USDA bulletin entitled "Uses of Sewage Sludge Compost for Soil Improvement and Plant Growth," publication number ARM-NE-6.

Dr. Francis Gouin of the University of Maryland has also published his research in a number of papers and articles. These publications address various utilizations and their optimum application rates; all of these publications are available from any major compost marketing group and/or the Department of Agriculture, Beltsville, MD.

There are today several popular methods of producing compost; most of these methods have evolved from

Don't Knock It Until You've Tried It. **COMPOST**

by **N. Grove Teates**, compost manufacturing and marketing consultant, Wheaton, MD.



Grade one compost can be used as a topdressing for turf at 1/4- to 1/2-inch deep, preceded by double aerification and followed by single aerification and dragging.

Consider Compost Advantages

There are many advantages of using compost in the soil mix to enhance growth. Consider the following:

A Compost provides humus, and to some extent, fertilizer. This combination tends to raise the cation exchange capacity in the medium and makes fertilizer already present in the medium more available to the plants. The net overall effect is that the fertilizer requirement for the medium is reduced considerably.

In some cases, golf courses using compost have reduced their fertilizations from four to two applications per year. This represents significant savings.

B Some compost may contain lime and have a fairly high pH. This reduces the need for purchased lime on some jobs. Some composts have tremendously high buffering capabilities and are used where there is very acid leachate or acid water which needs an offsetting element.

C Compost adds a lot of humus to the soil at a reasonable cost. Of course, humus content of the soil is a great factor in limiting the tendency of soils to pack. It has been observed in some governmental lawns, which have been topdressed over the years with compost, that are almost impossible to pack. This is extremely good for grass which must be grown in harsh locations.

D Compost hastens seed germination time significantly. This may eliminate the need for sod, which might otherwise be installed to produce green rapidly. Cases have shown with favorable moisture and temperature, and compost addition to a seed bed, fescues will germinate within five days and

may be 2-inches tall in two weeks.

Frank Bowman, superintendent of Golf Courses in Springfield, OH, had Columbia Bluegrass which germinated in much less time than expected, which was pleasing to all concerned. Because grass germinates so quickly when compost is added to a seed bed, it may be necessary to sod only swales and other waterways for erosion prevention. Significant areas of disturbed land have been reclaimed in this manner at a reasonable cost.

E Compost helps maintain the color of grass as the temperature drops in the fall and winter. This "green effect" from grasses is important in that it makes golf course superintendents that have used compost look extremely good; their tees, aprons, and fairways may be green when the rest of the course is brown. It has been generally noted that the color of grass holds until a 15 degree F to 20 degree F temperature condition is established, when the treated grass begins to brown off to match surrounding grasses.

It is at this time of the year that the quality of the spreading job becomes most evident. During the winter months, skips will become extremely evident and will look like brown streaks put on an otherwise green background.

F Compost gives grasses drought resistance. This was much evidenced in the summer of 1983 when a drought made irrigation a necessity to produce green grass. Grass which had been topdressed heavily with compost withstood the lack of moisture much better and retained its color much longer.

In esthetics alone, compost was cost effective. □

to insure that all the contents of the pile reached at least 55 degrees C, which assures pasteurization. Then the woodchips are removed from the pile by screening. The woodchips are used again in the composting process and the screened compost is ready for sale/distribution.

Compost grades

Most composting facilities produce at least two grades of compost. Grade one compost has been screened through a 1/4-inch mesh screen. This

Compost improves soil water holding capacity, an important factor for flower beds and new lawns.

material is suitable for topdressing turf and other applications where one does not desire a significant amount of woodchip residue.

Grade two compost is screened through either a 3/8-inch or 1/2-inch mesh screen, and is coarser containing more woodchip particles. This grade is desirable for horticultural media and for general soil improvement, as the additional porosity of the product opens the soil and improves drainage.

Precautions

Regardless of the type of composting process, there are several things to remember.

First, the product must be pasteurized. This eliminates the possibility of serious health problems arising from the use of sludge compost. Compost is currently widely used in vegetable gardens and other sensitive locations throughout the United States.

Compost, in order to be considered stable, must be almost biologically inactive. If the microbes are active in the compost, usually evidenced by heat generation, then one can suspect that the compost is not mature, but "green" compost. It is desirable to use mature compost, because mature compost will release nitrogen.

If the product is green compost or only partially composted, then it is in a nitrogen gathering stage and will produce negative results when applied to plants in general.

The compost should be aerobic, not anaerobic. Aerobic means that the compost has been made by a tech-

the basic Beltsville Process.

Generally, a sludge which is very similar in appearance to brick mortar is mixed with a bulking agent. This bulking agent, usually woodchips, serves to allow air to filter down through the composting mass. The mixing of the woodchips allows bacteria within the pile to breathe oxygen

and multiply. This bacterial activity creates an elevated temperature which over a period of time pasturizes the pile and kills pathogens, digests the sludge, and leaves a humus which is called compost.

After the composting process is complete, the pile is then broken down and remixed and recomposted

nique utilizing oxygen breathing bacteria. If the composting process is anaerobic, then there is considerable odor associated with it and the compost is undesirable for most applications.

Anaerobic material can be changed to aerobic material by proper composting techniques. Under all conditions, the compost must be clean of foreign debris, uniform throughout, and free of weed seed.

Compost moisture is another important consideration; the moisture of the product should be in the range of 50 percent or below, or else it will have a tendency to clump together and difficult to apply.

Compost benefits

Compost has many practical uses. Among the most important is as a topdressing material for established turf.

Considerable amounts of compost are used for commercial areas where compaction is a problem (i.e., apartment complexes, condominiums, parks, and heavy foot traffic areas). All athletic fields fall into this category.

The porosity of the fl1 compost opens compacted soils as well as adds humus to them. Humus provides chemical buffering capacity and water storage to the root-zone.

Governmental agencies use significant amounts of compost for topdressing. Customers within this category range from the National Park Service to state and local governments. A considerable amount of space in downtown Washington, D.C. receives only compost for fertilization. Compost is excellent for topdressing areas which must withstand public scrutiny daily.

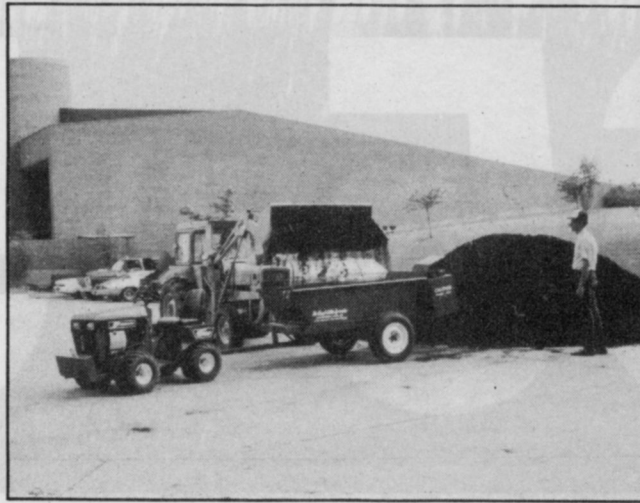
Finally, compost is a very good topdressing on fine residential lawns. It enhances grass growth where there is traffic and compaction, and reduces the need for fertilization at the same time.

In all cases, compost should be applied at a rate from 1/4-inch to 1/2-inch thick for topdressing. It is strongly recommended that the soil be aerated at least twice before and once after the application of compost. Aeration tends to eliminate layering of compost on a given soil. Also, like any topdressing, it is helpful to use a drag to break up compost clumps and soil cores and blend them into the turf. After topdressing is complete, the turf can be overseeded.

Compost must be applied as carefully as other topdressing materials. Skips will become evident normally within 10 days.

Compost should be applied with a spreader if possible, in one direction at half the intended rate and then at half the rate at a right angle to the first application. This practice eliminates skips.

Compost can also be used in construction of new lawns and seed beds. Often after a building is completed, sub-soil is the only real soil medium that exists. At this stage, the land-



Bulk compost should be protected from rain during hauling and storage for proper handling texture.

scaper must either bring in topsoil to augment the sub-soil and/or otherwise improve it for lawn and flower bed installation.

Compost can be spread at a depth of approximately 1-inch to 1-1/2-inches and incorporated into the soil

Aerate the soil twice before topdressing with compost, and once afterward.

with a rototiller or a disc.

Normally, mixing ought to produce a 50% mixture of compost and parent soil. For example, if 1 inch of compost is applied, the mixture is cut into the native soil 1-inch deep.

The addition of compost to this soil enhances grass seed germination and may reduce the amount of fertilization needed for a new lawn during the first year, and sometimes for the second year.

In annual and perennial beds, compost depths of up to 2-inches may be mixed into the native soil. This produces a humus-rich growing medium;

the expected results are that plants will bloom earlier and hold their blooms longer than they would in a soil which was augmented only with commercial fertilizers.

Compost also increases soil water holding capacity, an important factor for flower beds and new lawns. Because compost amended media holds water better, plants growing in those media are more drought resistant.

Compost greatly reduces the cost of greenhouse container mixes: even if a grower is currently using commercially prepared mixes, the addition of compost to these mixes can reduce their cost and enhance the plant growth.

Researchers at Ohio State University, at the University of Maryland, and elsewhere are indicating that the compost addition to the currently used mixes generally increases profits. This is extremely important to cost-conscious operators today.

An additional benefit that is now being studied is the addition of compost to growing media, up to 50 percent by volume, appears to have a fungicidal effect that reduces or eliminates the need for drenching for fungus in greenhouses.

Again, a cost savings is realized by the greenhouse operator. The bottom line is that compost amended soil media produces hardier plants within the same time period or the same size plants within a significantly shorter period than do standard growing media. Again, there are savings associated with these characteristics.

More and more compost is being produced throughout the United States. Right now, up to 50 cities are currently building or already have compost plants. Within the next five years, the availability of compost will grow drastically and many landscaping and related industries will have the opportunity to use it. Compost is generally very reasonably priced, at topsoil prices or below.

Organizations selling compost spend the majority of their time educating their users to reduce trial-and-error risks. Once the public is educated to the product and has used it one time on a trial basis, they're usually hooked.

The bottom line in either greenhouse or landscape and/or residential use is that compost produces results while saving money. Nothing gets our attention as well as money in the bank.

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