

Rebuilding the soil

Compost could be the answer to creating a nutrient-rich soil that can promote healthy, tolerant turfgrass stands.



Dark brown compost helps mums 'pop' at Sea World

■ Scoop the dark material up in your hands. It's barely moist to the touch with an earthy but not unpleasant odor.

If it's good compost, if it comes from a pile that's weed free, that's been mixed and

turned properly. If it hasn't been hurried and it's been allowed to run its course biologically and chemically, it will crumble and dissolve through your fingers like something precious.

Thirty percent sand, 40 percent soil, 30 percent organic matter for best growth.



Commercial compost manufacturers are convinced—with a little hope and trepidation thrown in—that the green industry will use more of their product. They believe that demand for compost should increase substantially for its use in "recipe" (blended) topsoils, and as an amendment for poorer-quality native soils.

Implications for the green industry are exciting. Compost promises to be the next major source of organic material that landscape managers use to modify or improve soils for turfgrass, ornamentals, planting beds.

Thomas Taylor, landscape manager at the University of Delaware in Wilmington, has been

using compost for years, primarily for construction and reconstruction of turfgrass areas, particularly athletic fields. He estimates the university has purchased almost 5,000 cubic yards of compost.

"Using compost is an inexpensive and ecologically sound procedure to improve native soils for the specific purposes of growing turf and other plants," Taylor says.

Taylor rebuilt the university's football field by removing the top eight inches of the field's existing silt/loam soil and replacing it with a native loamy/sand soil amended with compost.

In a separate project, he says 400 yards of compost incorporated into the native soil of the school's lacrosse field now allow that field to be aerated with normal aeration equipment. Aeration is sometimes impossible in two nearby practice fields where soils haven't been improved with compost.

"The incorporation of compost as a soil amendment is not a complete answer, but it has proven its worth to us," says Taylor.

Why use it?—Taylor says more landscape managers will use compost if it's:

- ✓inexpensive,
- ✓easily available in bulk quantity,
- ✓of uniform quality and texture,
- ✓deliverable with minimum notice to reduce on site storage and odors.

"The biggest reason we use it is because of the color," adds Rob McCartney, horticulturist and grounds manager at Sea World, Aurora, Ohio. The lasting, dark brown product he receives—darker than coffee grounds—helps Sea World's floral displays "pop out" at visitors, he explains.

In addition to serving as a substitute for mulch, McCartney uses compost as a soil amendment in Sea World's planting beds. His Sea World crew must plant thousands of flowers in just weeks. Sometimes the crew just has time to "drill holes in the soil and slip them in." McCartney says that compost-condi-

Compost as a soil amendment in Sea World's planting beds. Sea World crews must plant thousands of flowers in just weeks.



University of Delaware field has native loamy/sand soil amended with compost.

tioned soil allows them to do this more efficiently. Also, Sea World uses compost as a topdressing for its many "pocket" lawns, again with visible improvement to these areas.

McCartney admits he puts much trust in a product many landscape professionals are just learning about. Park visitors, however, tell him that what he and the his crew are doing with compost is appreciated. Visitor surveys, he says, put Sea World's landscape at the top of the list of attractions they like most.

What can it do?—Soil scientist Dr. Ed McCoy of Ohio State University describes organic material, including compost, as the "buffer" in the soil. He says it buffers the soil:

- from excessive drought;
- microbiologically, increasing the soil's microbial diversity;
- chemically, by providing a cation exchange capacity.

The bigger question, asks McCoy, is how much organic matter is needed to provide soil characteristics leading to optimum turfgrass growth?

"There is a point of diminishing return as you add more and more peat to the system to essentially where you have a full organic soil, and you really don't get much additional benefit," he says.

McCoy suggests a ratio of about 30 percent sand, 40 percent soil and 30 percent organic matter (5-10% by weight) for best turfgrass growth. Either peat or compost can be used as the soil's organic component, although the two materials differ. Compost generally differs from peat, says McCoy, in that it:

- is more aromatic,
- is finer textured,
- has a lower cation exchange capacity because it has a lower organic content,
- tends to have higher soluble salts, and
- tends to have a higher pH.

"If you put compost as an amend-

ment into a clay soil, you can improve aeration and soil structure. You get better turfgrass rooting, better turf growth," adds Dr. Peter Landschoot, Penn State University, who spoke about compost at the Ohio Turfgrass Conference this past July.

What's available?—Landschoot, who has been studying composts for several years, has reviewed products made from landscape debris, a paper mill, brewery wastes, mushroom production, sewage sludge, and, even, poultry manure.

"Composts vary tremendously from source to source either in their chemical or physical properties," he says. For instance, of the composts he's tested, organic matter content ranged from 15 to 80 percent, moisture content from 20 to 60 percent, and pH from 6.0 to 9.0. Also, some composts have different carbon/nitrogen ratios and levels of soluble salts.

In his Penn State experiments, workers bulldozed five inches of topsoil from plots, leaving a "lousy subsoil" to plant turfgrass. The researchers then worked and rototilled the soil and added different compost products, a two-inch layer (about 6 cu.yds./1,000 sq.ft.) of each to predetermined plots, leaving some without compost as checks. They planted all plots with Baron Kentucky bluegrass.

"All of these products improved turf cover 32 days after seeding over the controls," reports Landschoot, although there were "some pretty significant differences" among products in the rate of establishment.

—Ron Hall



Landscape manager Thomas Taylor uses compost to amend soils in the athletic fields at the University of Delaware.



Rob McCartney, horticulturist at Sea World, Aurora, Ohio, says rich, dark color of compost gives the theme park's floral displays more sparkle.