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COMPOST IS A SUSTAINABLE CHOICE FOR LANDSCAPE ARCHITECTS

By Ron Alexander

CAN LANDSCAPE ARCHITECTS BE SUSTAINABLE and environmentally minded when it comes to establishing new landscape and turf-planting areas? At the same time, can they be economically practical and functional? They can be if they're using compost, a product resulting from the controlled biological decomposition of organic material that has been sanitized through heat generation and stabilized to be beneficial for plant growth.

Because compost is produced from recycled feedstocks (municipally, industrially or agriculturally generated), it is considered more environmentally sustainable than peat, pine bark and topsoil products. In addition, compost use in landscaping has been well researched, proving it to be an effective product for improving deficient soils physically, chemically and microbiologically. However, specifiers should be wary; not all compost is the same.

SOIL QUALITY

It is well documented that there has been a significant reduction in soil quality across the nation. This reduction not only affects farming communities, it also affects the landscaping industry. It has become more difficult for those in the landscaping industry to obtain functioning, landscape-grade soils they can use on projects. Fortunately for the industry, this situation has coincided with an increase in compost production.

As we all know, poor soil conditions make it more difficult and costly to manage the landscape. However, we also now know by improving soil health, or enriching it with stabilized organic matter primarily in the form of compost, not only can plant growth be improved but sustainability of landscapes also is improved.

Research completed by Pennsylvania State University, State College, has shown that functional topsoil can be created by blending compost with subsoils. For example, "Using Composts to Improve Turf Performance" by Peter Landshoot, associate professor of turfgrass science, states: "Good quality compost will



Compost was used to establish this soil bed.

improve structure, reduce surface crusting and compaction, promote drainage and provide nutrients. In sandy soils, compost increases water and nutrient retention, supplies nutrients and increases microbial activity. These improvements promote faster turf establishment, improved turf density and color, increased root growth, and reduce the need for fertilizer and irrigation."

The continued growth of the U.S. composting industry has made it a viable and significant supplier of products to the landscape industry. Today, there are many high-quality, refined compost products available commercially throughout the United States. In fact, there are about 2,000 commercial-scale composting facilities producing more than 50 million cubic yards (38 million m³) of compost annually. (There are about 5,000 composting facilities nationwide.)

Of course, not all existing composting facilities are producing a commercial-grade product, and, for that reason, it is key that any compost specified for use by a landscape architect be properly tested. If a composter cannot produce regular third-party test result data, then he does not operate a quality-control program and his product should be avoided.

The U.S. Composting Council (USCC) developed its Seal of Testing Assurance (STA) Program in March 2000 to improve a customer's ability to select, purchase and use compost. The program rules require participating facilities to sample and test their compost products on an

LANDSCAPE APPLICATIONS SOIL AMENDING AND MULCH*

GENERAL RANGE

PARAMETERS <i>(as provided in Test Methods for the Examination of Composting and Compost, U.S. Composting Council)</i>	REPORTED AS <i>(units of measure)</i>	TURF ESTABLISHMENT, PLANTING BED ESTABLISHMENT, BACKFILL MIX	MULCH
pH ¹	pH units	6 - 8.5	5.5 - 9
Soluble Salt Concentration ¹ <i>(electrical conductivity)</i>	dS/m <i>(mmhos/cm)</i>	Maximum 10	Maximum 10
Moisture Content	Percent, wet weight basis	30 - 60	25 - 60
Organic Matter Content	Percent, dry weight basis	30 - 65	>30
Particle Size	Percent passing a selected mesh size, dry weight basis	98 percent pass through 3/4-inch (19-mm) screen or smaller	99 percent pass through 3-inch (76-mm) screen, >25 percent pass 3/8-inch (10-mm) screen
Stability ² Carbon Dioxide Evolution Rate	mg CO ₂ -C per g OM per day	<8	N/A
Maturity ² <i>(bioassay)</i> Seed Emergence and Seedling Vigor	Percent, relative to positive control percent, relative to positive control	Minimum 80% Minimum 80%	
Physical Contaminants <i>(inerts)</i>	percent, dry weight basis	<1	<0.1

¹ It should be noted the pH and soluble salt content of the amended soil mix is more relevant to the establishment and growth of a particular plant than is the pH or soluble salt content of a specific compost (soil conditioner) used to amend the soil. Each specific plant species requires a specific pH range. Each plant also has a salinity tolerance rating; maximum tolerable quantities are known. Most ornamental plants and turf species can tolerate a soil/media soluble salt level of 2.5 dS/m and 4 dS/m, respectively. Seeds, young seedlings and salt-sensitive species often prefer soluble salt levels at half the previously mentioned levels. When specifying the establishment of any plant or turf species, it is important to understand their pH and soluble salt requirements and how they relate to existing soil conditions.

² Stability/Maturity rating is an area of compost science that still is evolving, and, as such, other various test methods could be considered. Also, never base compost-quality conclusions on the result of a single stability/maturity test.

*Decorative mulch need not be mature or stable as long as it is applied to the soil surface. Mulch will possess a minimum organic matter content of 50 percent, and 100 percent of the coarse particles should pass a 3-inch (76-mm) screen.

References: "Landscape Architect Specifications for Compost Utilization," U.S. Composting Council, 2003

THE **U.S. COMPOSTING COUNCIL (USCC)** DEVELOPED ITS SEAL OF TESTING ASSURANCE (STA) PROGRAM IN MARCH 2000 TO IMPROVE A CUSTOMER'S ABILITY TO SELECT, PURCHASE AND USE COMPOST.



These photos show how compost prepped the soil for re-establishment of turf.

ongoing basis by a network of certified laboratories that use uniform protocols provided by USCC. It also requires the disclosure of test analyses and product ingredient data, as well as end-use instructions to compost customers. This is what you would expect when specifying or using any horticultural product. (For details about the STA Program, see Figure 1. For a list of STA Program-certified composters, visit USCC's Web site, www.compostingcouncil.org, and click on STA Program.)

SPECIFICATIONS

Landscape architects have been demanding compost specifications for years, and various public entities require them to utilize and purchase products. In response, several relevant projects have been completed to fill this technical void though it nearly is impossible to develop compost specifications perfect for every application because of varying soil types and the variety of plant species we grow in the landscape.

The specifications in Figure 2 were developed by me under grants provided by the U.S. Environmental Protection Agency and Minnesota Office of Environmental Assistance. These specifications may be modified to meet specific project and regional requirements. Further specifications regarding the use of compost in erosion control can be found at www.alexassoc.net.

In addition, the commercial-composting industry has made great strides in the development of compost end-use publications and tools. Many of these tools can be found on USCC's Web site.

SPECIFY COMPOST

Compost can provide the landscape architect with a sustainable product that is effective and economical to use. We now have a means by which to consistently characterize compost products (STA Program) and some specifications in which to evaluate them. These tools will be invaluable to landscape architects, allowing them to more effectively specify, compare and use compost products.



Compost can be used as a component to growing media as in this chrysanthemum greenhouse.

Remember, high-quality compost consistently performs "in the field." Start specifying compost now in place of traditional, nonrenewable resources and begin to realize the many benefits these products have to offer! ♻️

Ron Alexander is president of R. Alexander Associates Inc., Apex, N.C. He is a horticulturalist involved in composting and compost use for more than 20 years and the author of The Field Guide to Compost Use and Landscape Architecture Specifications for the Utilization of Compost. He also is co-manager of the U.S. Composting Council Seal of Testing Assurance Program. He can be reached at (919) 367-8350.

TO LEARN MORE ABOUT COMPOST

and the benefits of compost use in a variety of applications, attend the U.S. Composting Council's 14th Annual Conference & Trade Show, Jan. 22-25, 2006, in New Orleans. For more information, visit www.compostingcouncil.org.

KEY ELEMENTS OF THE U.S. COMPOSTING COUNCIL'S SEAL OF TESTING ASSURANCE PROGRAM

1 PARTICIPANTS REGULARLY MUST SAMPLE AND TEST THEIR PRODUCTS.

- Testing frequency is based on the quantity of compost produced.

Compost Quantity

1 – 6,250 tons (0.9 – 5669 metric tons)
6,251 – 17,500 tons (5670 – 15876 metric tons)
17,501 tons (15877 metric tons) and above

Frequency

Once per quarter
Once per 60 days
Once per month

A sample must be tested for pH; soluble salts; nutrients, including calcium, magnesium, nitrogen, phosphorus and potassium; moisture; organic matter; maturity (bioassay); stability (respirometry); particle size; pathogens, according to U.S. Environmental Protection Agency (EPA) 503; and trace metals, according to EPA 503.

2 PARTICIPANTS MUST MEET APPLICABLE STATE AND/OR FEDERAL REGULATIONS TO ENSURE PUBLIC HEALTH AND SAFETY AND ENVIRONMENTAL PROTECTION.

- Applicable tests for pathogens, heavy metals, pesticides, inerts, etc., must be completed and standards met.
- Participants' facilities must be compliant with all applicable regulations.

3 TESTING MUST BE COMPLETED AT APPROVED LABORATORIES.

- Approved labs are required to use test method protocols from the *Test Methods for the Examination of Composting and Compost* manual, published by the U.S. Composting Council (USCC).
- Approved labs are required to participate in the Compost Analysis Proficiency program administered by Utah State University, Logan, and managed by Bob Miller for Colorado State University, Fort Collins.

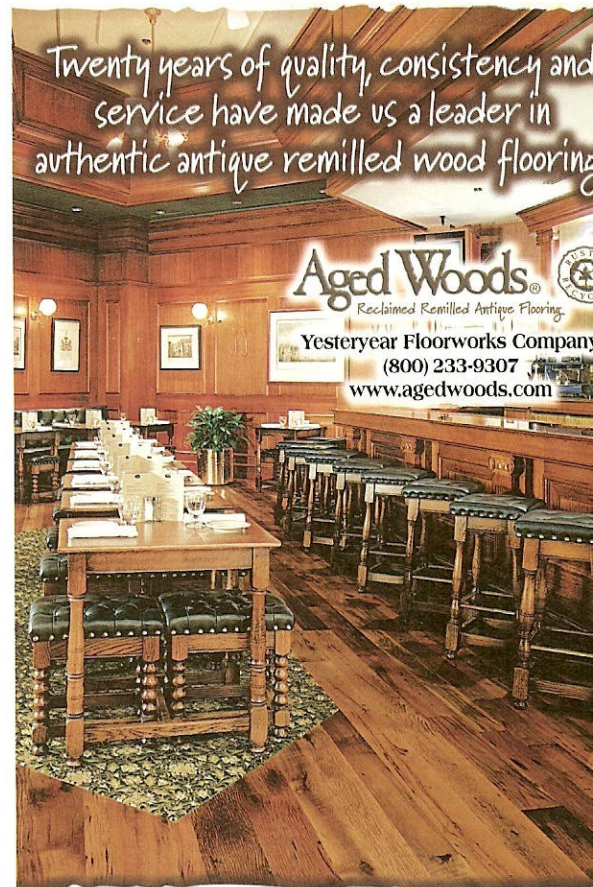
4 PARTICIPANTS WILL OFFER DIRECTIONS FOR PRODUCT USE AT POINT OF SALE.

- Directions will include a list of product ingredients.

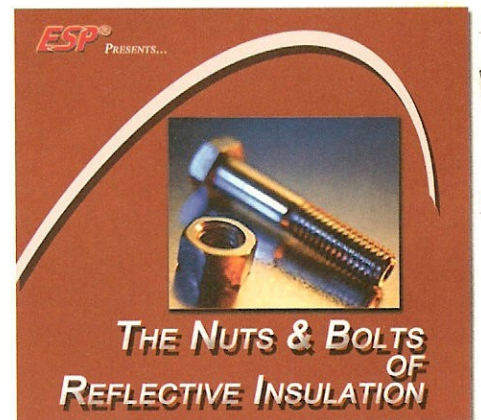
5 PARTICIPANTS WILL MAKE TEST RESULTS AVAILABLE TO INQUIRING CUSTOMERS.

- Test results should be in the form of the "Compost Technical Data Sheet," a uniform product label.

6 PARTICIPATING COMPOSTERS HAVE THE ABILITY TO USE THE PROGRAM'S LOGO IN THEIR PROMOTIONAL EFFORTS. LOOK FOR THE SEAL! ▾



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