

landscape architecture

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Compost and the Landscape Architect

New standards make compost more reliable for landscape use. **BY RON ALEXANDER**

Compost is a recycled product that can be of great benefit when designing new landscapes. This is because compost is an effective product for improving deficient soils—physically, chemically, and microbially. Compost is also now readily available and can be produced to a consistent quality. The increase in compost production has (fortunately for the landscape industry) coincided with the significant reduction in soil quality across the nation. Fortunately, we now know that by improving soil health, enriching it with stabilized organic matter in the form of compost, we can improve plant growth and advance sustainability.

The benefits of using compost are numerous and well understood. Compost

- improves the soil structure, porosity, and bulk density of any soil it is blended with—creating a better plant root environment
- increases moisture infiltration and permeability of heavy soils—improving drainage and reducing erosion and runoff
- improves moisture-holding capacity of light soils—reducing water loss, watering frequency, and nutrient leaching
- improves and stabilizes soil pH
- improves cation exchange capacity of soils—improving their ability to retain nutrients for plant use
- supplies a variety of macro- and micronutrients—reducing the initial need for chemical fertilization
- supplies significant quantities of organic matter

Before and after photos are shown at left.

Top, a defunct road was taken out and the hillside restored using composted biosolids as part of the Mountains to Sound Greenway project in Washington. Middle, an eroding bank was stabilized using an erosion-control mixture; erosion-control plants are thriving.

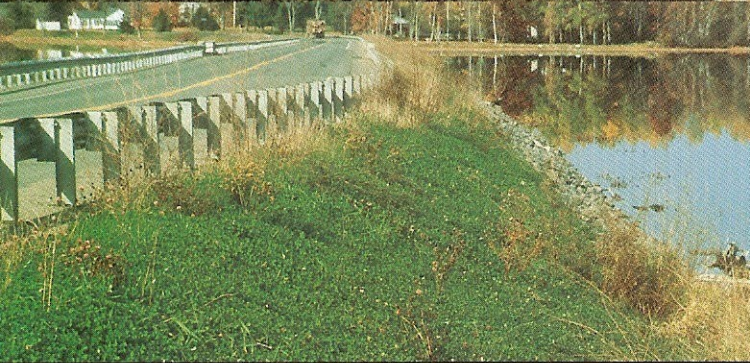
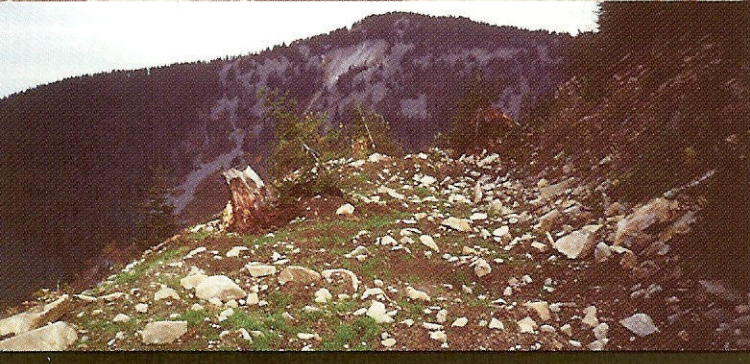
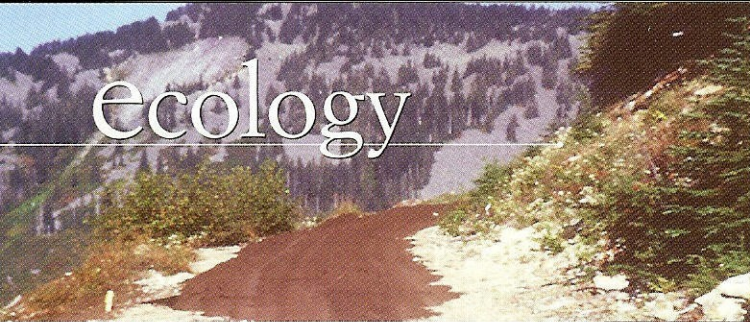
Bottom, a playing field was revived with a top dressing of compost.

● supplies beneficial microorganisms to the soil—improving nutrient uptake and suppressing certain soil-borne diseases

● binds and degrades specific pollutants in soil, water, and air.

WHAT IS COMPOST?

Compost is a product resulting from the controlled biological decomposition of organic matter that has been sanitized through the generation of heat and stabilized to a point where it is beneficial to plant growth. Compost is produced through the activity of aerobic (oxygen-requiring) microorganisms. These microorganisms require oxygen, moisture, and food to grow and multiply. When these resources



are maintained at optimum levels, the natural decomposition process is greatly accelerated. The microbes generate heat, water vapor, and carbon dioxide as they transform raw materials into a stable soil conditioner. Active composting is typically characterized by a high-temperature phase, which sanitizes the product and allows a high rate of decomposition. This is followed by a lower-temperature phase that allows the product to stabilize while still decomposing at a slower rate.

Compost can be produced from many source materials, and state and federal regulations ensure that only safe, environmentally beneficial composts are marketed. The source materials include yard trimmings (e.g., leaves, grass, brush), biosolids (municipal sewage sludge), municipal solid waste (MSW), and agricultural (e.g., manures), food, and industrial by-products. Although the overall characteristics of many composts are similar, specific source products do have a tendency to possess specific characteristics. For in-

stance, biosolids, food, and manure-based composts are more likely to contain greater amounts of nutrients and therefore typically possess a higher soluble salts content (nutrients are salts). MSW composts will typically contain some man-made inerts, while manure and yard trimmings composts often possess a higher pH. None of the characteristics are necessarily problematic, but they are important to understand. Overall compost quality is less dependent on the source material (as long as it is of decent quality and safe) and more dependent on the skills of the composteer. Therefore, it is key to identify composters who know how to compost properly.

Fortunately, the continued growth of the U.S. composting industry has made it a viable and significant supplier of products to the landscape industry. There are somewhere between 1,500 and 2,000 commercial-scale composting facilities producing more than 50 million cubic yards of compost annually. (There are probably 5,000 composting facilities in all, nationwide. Of course, not all of the existing composting facilities are producing a commercial grade product, and not

all states possess a high number of large-scale composting facilities. Many small-scale composting facilities (primarily managing yard trimmings) simply "pile up" materials for a year or two, then give the product away as is. Such products often are produced with little quality control, so they may be unstable (which will cause stunted plant growth), or they may contain weed seeds. It is key that any compost that is specified for use by a landscape architect be properly tested. If composters cannot produce regular test result data for you to review, then they do not operate a quality-control program, and their product should be avoided.

The commercial composting industry has made great strides in market development, as it has developed a variety of compost end-use publications and tools. These efforts have been largely accomplished through the United States Composting Council (USCC), its Market Development Committee, and some state composting associations and recycling organizations. Another major area of interest to compost end users, as well as to the composting industry, has been the development of

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specifications for compost was necessary to better promote the use of compost in state highway applications. In 2000, the USCC applied for and received a grant from the EPA to promote compost use in state DOT applications and, as part of the project, to develop a model DOT compost specification for compost used in soil-amending applications. The model specification (shown opposite) includes suggested numerical standards as well as actual application instructions (not shown). The development of this industry-based numerical standard derived both from actual field success and from specifications that are known to be effective and practical on landscape projects. Additional information about the DOT project report can be found on the USCC's web site (see Resources).

Another national compost standards effort has been sponsored by the Recycled Materials Resource Center at the University of New Hampshire (funded by the Federal Highway Administration). These efforts are focused on the development of a

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compost specification for use in erosion and sediment control. The project will develop a formal information package pertaining to the use of compost/mulch in erosion and sediment control that can be used by landscape architects to better specify compost in this application.

THE SEAL OF TESTING ASSURANCE PROGRAM

Because of the USCC's interest in establishing compost quality standards for the industry, it developed the STA program in 2000 with help from an EPA grant. This program is seen by many as the first step toward the establishment of national compost standards. The STA program currently has 60 composting facilities participating

and more than 1.7 million cubic yards of compost under certification (see sidebars). The STA program allows compost buyers to more confidently purchase compost for a particular project and ensure that they will receive a quality product. It also allows them to more systematically compare compost products, facilitating an educated purchasing decision.

The STA program is encouraging much-needed standardization within the composting industry—it requires consistency in product sampling, lab testing methodologies, and product labeling. Only through this type of industry-wide consistency can landscape architects, and others specifying the use of landscape materials, become comfortable with compost products.

Yet, even with all of the potential benefits to its participants (the composters), end users, and specifiers, as well as the long-term viability and growth of the composting industry, many composters resist such national efforts. Some composters do not believe the program is necessary, and others simply don't want to invest in program participation. This is where landscape architects (Continued on Page 98)

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Ecology

(Continued from Page 46) can be proactive, requiring the compost products they specify to be "certified" through the STA program. The success of the STA program (the only national program of its type) goes far beyond the marketing success of any individual composter. It works toward the goal of bringing consistency to the composting industry. This consistency is something that end users have been concerned about ever since the composting industry has become commercially viable. Without an understood and consistent basis to evaluate compost products, credible standards for compost can't even be considered.

Remember, consistently high-quality compost consistently performs in the field. Probably the greatest benefit of compost products is their versatility in a variety of landscape applications, their increasing availability, and their ease of use. These benefits can best be seen when using high-quality compost products. **LA**

Ron Alexander, president of R. Alexander Associates in Apex, North Carolina, is co-chair, USCC Market Development Committee. Alexander is a horticulturist who has been involved in composting and compost use for almost 18 years. He is manager of the USCC Seal of Testing Assurance Program.

RESOURCES

For additional information on the STA program and its participants, visit the USCC web site (www.compostingcouncil.org), or contact the USCC business office at 631-864-2567 or Al Rattie at 215-258-5259. Two popular compost use publications, *The Field Guide to Compost Use* and *Landscape Architecture Specifications for Compost Utilization*, both written by Ron Alexander, are available on the web site.

SEAL OF TESTING ASSURANCE PROGRAM, 2001-2002 PARTICIPANTS*

California

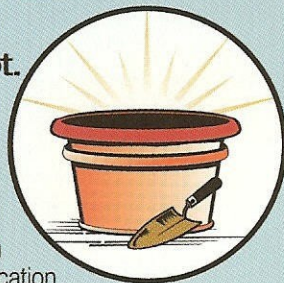
Inland Composting & Organic Recycling, Colton, CA, 909-684-7336
San Joaquin Composting, Inc., Bakersfield, CA, 661-391-5848

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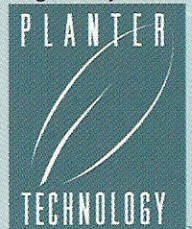


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