

TURF MAINTENANCE



USING COMPOST

Description:

This work consists of spreading a uniform layer of compost over existing turf in order to improve soil and vegetation. This specification applies to both cool and warm season grass species and is most beneficial when done in conjunction with aerification.

Key Benefits/Return on Investment:

- Nutrient savings – 50% or more of fertilization for the first year,
- Water savings – may be significant with multiple compost applications, or when done along with core aeration,
- Reduces soil compaction when completed along with aerification,
- Assists in the degradation of thatch,
- Enhances the rate of establishment and overall appearance, and
- May provide soil-borne disease suppression, reducing pesticide applications.

Extensive practical experience illustrates successful turf top dressing on residential, commercial and sports turf.

Construction Requirements:

- Mow grass to preferred mowing height or slightly lower.
- Core-aerate the entire area to be treated with compost. Ideally, use deep (4 to 6 inch long, 1/2 inch wide, minimum), hollow tines for best results. Larger holes will more easily allow for compost to be backfilled into them.
 - Aeration may also be completed with solid tine aerators or a verti-drain.
 - Make 4 to 5 passes over the area to be treated, moving in two directions. If compaction is a significant problem, then 8 to 10 passes with the aerator may be beneficial.
- Uniformly apply approximately 1/4 to 1/2-inch of compost across the turf area to be treated.

- Finer compost are required for this application, and lower application rates of compost should be used if the turf is mowed at a 1-inch height or below.
- Various types of spreading equipment may be used for top dressing, including a farm manure (with rear flails) or large lime/fertilizer (with rear spinners) spreader. However, specialized turf top dressers (with rear rotating brushes) and blower trucks may be the best pieces of compost top dressing equipment, as they project the compost through the turf canopy and onto the soil surface.
- Do not top dress if the grass is still wet from the rain or irrigation, as the compost will stick to the grass blades.
- Back drag the entire area with a weighted chain-link fence, rake, or specialized implement, to break up the cores and blend them with the compost to fill in the aerification holes.
- Overseeding may be completed before or after the compost is applied. If done after top dressing, then rake the seed into the compost layer to cover it.
- Water the treated area well.

Additional information:

- Finer, low in odor, and nutrient rich (nitrogen and iron) compost are preferred for this application.
- If top dressing is being completed to level the turf surface, then blending compost with a mineral soil or sand (50/50 v/v) is preferred.
- When applied in the Fall, the compost top dressing should replace the Fall/Winter fertility application.

General:

Compost Analysis: All compost products have different characteristics. Before selecting a compost product, a compost analysis should be completed by a reputable laboratory* to determine the characteristics of the material, so that the right material can be used for the appropriate purpose. Once determined, the soil should be appropriately amended to a range suitable for the turf species to be established and results desired.

Compost Parameters:

Parameters ^{1,5}	Reported as (units of measure)	General Range
pH ²	pH units	6.0 - 8.5
Soluble Salt Concentration ² (electrical conductivity)	dS/m (mmhos/cm)	Maximum 10
Moisture Content	%, wet weight basis	30 – 60%
Organic Matter Content	%, dry weight basis	30 – 65%
Particle Size	% passing a selected mesh size, dry weight basis	98% pass through 3/8" screen or smaller
Stability Carbon Dioxide Evolution Rate	mg CO ₂ -C per g OM per day	< 4
Maturity (Bioassay) Seed Emergence and Seedling Vigor	% relative to positive control % relative to positive control	Minimum 80% Minimum 80%
Physical Contaminants (man-made inerts)	%, dry weight basis	< 0.5% (0.25% film plastic)
Chemical Contaminants ³	mg/kg (ppm)	Meet or exceed US EPA Class A standard, 40 CFR § 503.13, Tables 1 and 3 levels
Biological Contaminants ⁴ Indicator Organisms Fecal Coliform Bacteria, and/or Salmonella	MPN per gram dry weight MPN per 4 grams dry weight	Meet or exceed US EPA Class A standard, 40 CFR § 503.32(a) levels

General

Soil Analysis: Before any soil preparation procedures ensue, a soil analysis should be completed to determine any nutritional or pH adjustment requirements necessary. Once determined, the soil should be appropriately amended to a range suitable for the turf species being managed.

Compost inclusion rates depend upon soil conditions and quality, plant tolerances, and manufacturer's recommendations. The use of stable, nutrient rich compost will reduce initial fertilizer requirements by the amount of available nutrients in the compost.

References:

Alexander, R.A., Benton, C.H, and O'Shea, M., Best Management Practice Guide Using Compost for Sport Pitch Renovation in Ireland within a Sustainable Sport Pitch Maintenance & Management System. RX3 funded project, March 2012.

Landschoot, P, personal discussions. The Pennsylvania State University, Agronomy Department, 4/28/2021.

Lawson, D. and Brundage, J., Demonstration Trials of the Utilization of Composted Materials in the Maintenance of Sports and Amenity Turfgrass. The Waste & Resources Action Programme funded report, January 2006.

Le Strange, M., Topdressing Compost on Turfgrass: It's Effect on Turf Quality and Weeds. U.C. Cooperative Extension, Tulare & Kings Counties, 1996.

***The Seal of Testing Assurance (STA) Certified Compost Program provides a comprehensive history of compost analysis results from proficiency-tested laboratories, list of ingredients, and suggested directions for using that unique product.**

www.compostingcouncil.org/participants

¹ Recommended test methodologies are provided in Test Methods for the Examination of Composting and Compost (TMECC, The Compost Research & Education Foundation).

² It should be noted that the pH and soluble salt content of the final amended soil is more relevant to the establishment and growth of a particular plant, than is the pH or soluble salt content of the specific compost used to amend the soil. The pH and soluble salt content of the compost is diluted when mixed with the native soil, so testing for these parameters in the amended soil is suggested. Each specific plant species requires a specific pH range. Each plant also has a salinity tolerance rating, and 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 afore 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.

³ US EPA Class A standard, 40 CFR § 503.13, Tables 1 and 3 levels = Arsenic 41ppm, Cadmium 39ppm, Copper 1,500ppm, Lead 300ppm, Mercury 17ppm, Molybdenum 75ppm, Nickel 420ppm, Selenium 100ppm, Zinc 2,800ppm.

⁴ US EPA Class A standard, 40 CFR § 503.32(a) levels = Salmonella <3 MPN/4grams of total solids or Fecal Coliform <1000 MPN/gram of total solids.

⁵ Landscape architects and project (field) engineers may modify the allowable compost specification ranges based on specific field conditions and plant requirements.