Drought Stress

Compost for plantings

Project Highlight

AGRESOURCE
ROOTED IN SUCCESS

2016 FALL NEWSLETTER

Hot and dry are the first two words that come to mind when thinking of the summer of 2016. We've seen several stretches over 90 degrees with extended periods of little to no rainfall. It has been a challenge for all and fall will be a welcome sight. In this newsletter edition we will bring you information to combat the stresses of summer and dive into fall with a plan for recovery and strengthening your program for years to come.

Check us out on Twitter (@Agresource_Inc) and Facebook for daily updates on what we and the industry as a whole are up to. Discover more about Agresource anytime at www.agresourceinc.com.

Agresource Inc.
100 Main St.
Amesbury, MA 01913

LID Conference 2016

Agresource will be displaying a poster presentation profiling recent soil projects at the *International Low Impact Development Conference* in Portland, Maine August 29-31. The conference theme is "Mainstreaming of Green Infrastructure and Low Impact Development in Municipal Programs". The conference is co-sponsored by the New England Water Environment Association and includes participants involved in the design, approval and implementation of low impact development methods in both urban and rural settings. Agresource's presentation will focus on the use of compost in manufactured soils for wetland creation, bioretention basins for storm water treatment and salt marsh restoration soils. Each soil type and environmental situation calls for different specifications which adhere to the highest of standards. Join Agresource and other industry leaders at the conference in Portland later this month.

Drought Stress -Mike Carignan

The summer of 2016 challenged all Green Industry professionals with areas all over New England in a level 1 or 2 drought. In a region with normally plenty of natural rainfall to come by, this weather has revealed flaws with the soil water holding capacity in our otherwise lush green spaces. What is soil water holding capacity and why is it important? Simply put it is the ability of a soil to retain the water that is applied to it and is critical for survival and growth of healthy plants.

Soil water holding capacity is controlled primarily by both the soil texture and the soil organic matter content. Soil texture is a reflection of the particle size distribution of a soil. For example a silt loam soil texture has 30% sand, 60% silt and 10% clay sized particles. In general, the higher the percentage of silt and clay sized particles, the higher the water holding capacity. The small particles (clay and silt) have a much larger surface area than the larger sand particles. This large surface area allows the soil to hold a greater quantity of water. The amount of organic material in a soil also influences the water holding capacity. As the level of organic matter increases in a soil, the water holding capacity also increases, due to the affinity of organic matter for water (http://www.agvise.com/educational-articles/water-holding-capacity/).

Limited soil water holding capacity not only leads to droughty plants, but can affect the loss of nutrients due to leaching. When a soil reaches field capacity (the point when the soil profile is fully saturated and cannot take in and hold more moisture) the profile will release what is held and the nutrients that have been solubilized will be released along with it. By increasing soil water holding capacity more water can be held and those soluble nutrients will stay in the soil and be available when needed by the plants.

The value of using compost to improve the water holding capacity of soils has been demonstrated in various field studies. For example, research studies performed in Connecticut by Dr. Abigail Maynard at the Connecticut Agricultural Experiment Station (see http://www.ct.gov/caes/lib/caes/documents/publications/bulletins/b966.pdf) showed that when a 3-inch layer of leaf compost was rototilled to a 6-inch depth the water holding capacity was increased 2.5 times over that of a native sandy soil and provided almost a 7 day supply of plant available water. Dr. Maynard reported that increasing the water holding capacity of the soil by adding compost helped all crops during summer droughts by reducing periods of water stress and keeping consistent soil water levels, helping to avoid the sharp ups and downs of drought and saturation peaks and valleys during stressful summer stretches.

More recent studies performed in California (see http://faculty.washington.edu/slb/docs/SBrown_compost_farmsoils_final.pdf) also found that compost amendment had significant positive impacts on increased soil water holding capacity and increased water holding capacity by 1.6 times over the soils that were not amended with compost. In addition, the use of compost increased water infiltration rates allowing water to enter the soil more readily and thus resulting in reduced runoff and improved irrigation efficiency.

How do we incorporate compost into the soil profile? Several approaches can be done to effectively start the process of soil modification. First things first, by starting with the correct planting medium with the correct soil organic matter for the desired crop most of these problems can be avoided. Unfortunately, this is not always the case as we inherit situations where the existing soil does not have adequate organic matter. The easiest and one of the most effective and non-disruptive approaches is to topdress troubled areas with compost. Topdressing can be performed either in conjunction with aeration or simply by placing the compost on top of the areas directly that need modification. With the passage of time and irrigation/precipitation the compost will work its way into the soil profile. Aeration will help

speed up the modification process by physically putting holes into the soil profile and filling them directly with compost. Both of these approaches are a process where soil physical properties will improve over time, we do not recommend a one-time heavy topdressing as a fix. Check out our website (www.agresourceinc.com) for more information and a copy of our topdressing guide to get more details on application rates.

For a one-time approach compost can be laid heavy on the surface (approx. 2 inches thick) and mechanically worked into the soil with the help of equipment such as rototiller, airspade, verti-quake. Although more disruptive, this heavy application and the ability to incorporate into a 6 inch or deeper layer the profile is quickly modified. For smaller, localized areas of vegetable or ornamental bed plantings both approaches can be used on a smaller scale.

Using compost when planting -Geoff Kuter

Gypsy Moth nest

Gypsy moth has been devastating parts of the North East over the past year by defoliating trees and leaving them weakened and slow to recover during a summer of droughty conditions. A single gypsy moth nest can hold 100-400 eggs ready to hatch and invade more trees over a larger area. It is likely that we will see the need to re-plant trees and shrubs that have succumb to the stress. The goal of this article is to provide planting tips for when epidemics like gypsy moth or wide spread disease wipe out trees and new ones need to be planted in their place to repopulate a location.

Guidance about using composts when planting trees and shrubs is often contradictory. Much of the generally available guidance that is readily located on the internet such as the USDA Forestry Service “Tree Owner’s Manual” provide no information regarding soil or the importance of soil quality when planting.

Publications available from various university cooperative extension sources, may provide detailed guidance on watering and the preparation of the planting hole, but offer very little information about soil. Often they preferentially recommend the use of the soil that is removed from the planting hole and supplemental use of compost only if the soil is of “poor quality.”

Field studies performed in the northeast support the amendment of the back-fill soil with composts and show that use of compost can have a significant advantage to survival of trees; particularly when minimal care is provided after planting. For example, a field trial conducted by the CT DOT observed that “none of the plants planted with compost needed replacement (i.e. the mortality rate was zero percent), compared to a mortality rate of approximately 40% in the standard ConnDOT control plants.”

Compost when added to the backfill mix improves the water holding capacity and provides slow release nutrients. In the case of a heavy clay soil or a soil with a high silt and clay content and prone to compaction, compost amendments will reduce soil density and increase the ability of the soil to not only absorb rainwater but also promote better root penetration.

The quantity of compost mixed into the existing soil depends on the quality of the existing soil and site conditions. A sandy soil or loamy sand should be amended with compost to achieve a minimal level of soil organic matter of between 3 and 5 %. This level of organic matter may require between 10 and 20 % compost by volume mixed into the soil (e.g. 1 part compost mixed with approx. 5 parts soil).

On the other hand, if the soil has both a low percent organic matter (1% or less) and a relatively high percentage of sand (i.e. soil classified as a loamy sand) then 25 to 30% compost by volume (1 part compost to 3 to 4 parts soil) may be needed. Unless dealing with the establishment of wetland species, that are highly tolerant of high organic soils, it is best to avoid using composts at rates above 30% by volume.

Regardless of the soil conditions the addition of a small amount of composts (about 10 % by volume) can result in improved soil conditions and improve soil health when planting new trees and shrubs.

In addition to improving the back-fill soil, composts can be used as a mulch for new plantings. Compost, in contrast to wood mulches, has a low C:N ratio and thus release nutrients as they slowly decompose. Wood applied as a mulch layer is not only slow to break down but as it decays will immobilize Nitrogen and thus retard the growth of newly planted trees.

Sandy Hook

Agresource is proud to be providing soils and compost for rebuilding of Sandy Hook, CT School.

About four years after the tragic shooting at the Sandy Hook, CT elementary school a new school is being opened this fall replacing the original facility. The new construction located on the same site includes new landscaping and sports fields.

Agresource has supplied compost and soil mixes for use in the project through Earthmovers Inc., Danbury, CT. We are proud to participate in this small way to the rebuilding and healing in the community. For details on the rebuilding project see: http://www.sandyhook2016.com/team.html