



AGRESPORT

Compost for Disease
Control

Project Highlight



2017 SPRING NEWSLETTER

Before we know it spring will have sprung and the 2017 season will be upon us. We thought winter was behind us before the winter storms showed up and reminded us that we live in the North East. As we all prepare to jump back into another year of green industry activities take a moment and flip through what Agresource has been up to. In this newsletter we will discuss some new ventures Agresource is embarking on as well as an article about the research behind the use of compost for plant disease control. We will also highlight a recent project and introduce you to a new Agresource employee.

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 or AGRESPORT at www.agresport.com

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AGRESport

Agresport is a new division of Agresource, focused on producing and distributing products used by golf courses and sports fields to maintain turf at a balance point between a high level of performance and appealing aesthetics. For over 30 years Agresource has been a leader in finding beneficial uses for organic residuals with emphasis on the production, marketing and distribution of compost through out the North Eastern US. As a part of using compost in a beneficial way Agresource moved into the production of engineered soils (wetland soils, bioretention soils, roof top soils, etc.) as additional outlet uses for material. Agresport will continue to build on the company's growth/evolution by preparing highly specified products such as; USGA topdressing sand, bunker sand, divot mixes, root zone mixes and a vast array of engineered soils and soils custom blended to specification.

With our new location opened on the South Shore of Massachusetts, Agresport and Agresource will be able to service a multitude of industries with a variety of products to fit almost any needs that arises. Agresport comes with the backing of Agresource, who's expertise in the industry has been around since 1984. Over the past several years more engineered soils are being requested by state agencies as well as private contractors for large scale construction projects. Economic growth since the down turn of 2008, has generated an increase in construction as well as golf course renovations. Members of the Agresource team have extensive backgrounds in landscape construction, soil blending and golf course maintenance and the time was right to expand the services and products we can provide.

Agresport will continue our tradition of quality materials and unbeatable service that Agresource was built upon.

NEW EMPLOYEE



Agresource is proud to welcome Kevin Crawford to the team. Kevin comes to us from TPC Boston, a private golf course that hosts The PGA Tour's Deutsche Bank Championship each year over Labor Day weekend. Kevin brings with him extensive work experience ranging from project management to high end turfgrass management. Kevin will fill the role of dispatch/quality assurance manager based out of our new South Shore location. As the company continues to expand, this role is vital to keeping up our high standards of quality materials and service. With his variety of experience and knowledge base we are looking forward to seeing Kevin grow this role around his

strengths and the company's collective goals

WILL ADDING COMPOST TO SOIL REDUCE PLANT DISEASE?

FACTS AND FICTION.

Various claims have been made that using compost as a soil amendment can suppress or even eliminate plant diseases caused by various soil borne pathogens. Often these claims are supported by observations that when compost was used there was a corresponding reduction in disease that was not observed in the absence of compost. We also see claims that a particular compost that is dominated by either fungal or bacterial populations should be used to enhance plant growth.

For the landscaper who is looking to avoid the use of chemical pesticides, such claims about composts and plant disease can be confusing and difficult to understand.

Agresource has followed the various research studies that are



published in scientific journals and offers the following guidance with regard to what is a very complex issue. Much of the university research related to use of compost to suppress or control plant diseases is now 20 or 30 years old. We have posted on our website an informative review by Dr. Eric Nelson from the Department of Plant Pathology at Cornell University on using compost to control turf grass diseases. Dr. Nelson began his research career at Ohio State University where he worked with Dr. Harry Hoitink on disease suppressive properties of compost. Reviews of Dr. Hoitink's and his student's research can be found by a simple internet search and provide a good perspective on the scientific basis of using compost amendments to control soil borne diseases.

More recent research and various reviews of research by other University researchers validates much of the early research and supports the following:

Composts added to soil do in many cases result in reduced levels of disease. Compost tea can also result in decreases in plant diseases but there are less studies and results appear to be more variable.

The level of disease control that is obtained depends on a variety of factors including the specific pathogen (the disease causing organism), the type of compost, the age of the compost, how much compost is applied, how the compost is stored and the timing of the application. As a result it is impossible to simply state that using compost will reliably reduce disease.

Disease suppression is due to the activity of microbes that colonize the compost after peak heating; i.e. mesophilic microbes that grow and thrive at moderate temperatures. Heat or other treatments that reduce microbial populations in the compost destroy or reduce the effects.

Research studies performed under tightly controlled conditions show that for certain pathogens and plants, disease can be reduced significantly by using composts as a soil amendment. Even if the level of reduction is not complete, compost use can have a generally positive effect reducing disease and in some cases control is as great as that obtained with chemical controls. Cases of compost enhancing or increasing disease are relatively uncommon. A recent European study looked at 17 different composts on 7 different pathogen/plant combinations and found that disease suppression was found in over 50% of the cases and in only three cases there was enhanced disease. Similar studies performed at Oregon State University showed that a majority of the 36 different composts tested significantly reduced *Pythium* diseases in container media. These same composts were much less successful controlling disease caused by *Rhizoctonia*.

Despite the research it is difficult to predict which compost will control what disease. For some diseases such as those caused by *Pythium* species, it is generally recognized that

disease is reduced due to the presence of active populations of microbes in the compost that compete for nutrients (sometimes referred to as “general suppression”). As the compost ages and the nutrients to support the microbial populations often declines, the compost may lose its ability to suppress these diseases. In contrast, for diseases caused by the pathogen *Rhizoctonia*, composts that harbor populations of fungi that have been shown to directly attack the pathogen (e.g. *Trichoderma* species) are most likely to be responsible for disease suppression.

Various laboratory studies conducted in growth chambers under controlled environments show that adding specific microorganisms to composts can effectively improve the suppression of diseases. These same microorganisms added in large numbers to peat based potting media amended with compost can be very effective and potting media inoculated with specific microbes are marketed for the biological control of diseases. However adding the specific microbes without compost may result in reduced disease control and adding microorganism alone to peat based media has limited success.

Research studies with compost or specific microorganisms to control disease in field conditions are very often less successful than studies performed with potting media in very controlled environments. In the field the soil is often already colonized with active microbial populations and it is unrealistic to expect that the existing active soil microbial community can be easily altered by adding compost amendments. For success we must also change the soil environment so that the beneficial microbes that have colonized the compost will have a competitive advantage to grow and survive in competition with the microbes that are already growing in the soil. In addition microbes added with the composts may not survive as organic matter decays and conditions change.

In conclusion, despite the very real evidence that compost amendments can reduce diseases, factors that are involved are very complex and it is very difficult to determine that a specific source of compost will predictively reduce disease. Unfortunately attempts to control disease by using compost with a particular type of microbial community are not likely to produce disease control on a consistent or lasting basis. However, we do know that the improvement of soil quality by using compost will not only result in greater soil microbial activity (which may or may not be adequate to reduce disease), but also will enhance plant growth through the addition of nutrients and improved soil physical properties. Using compost to increase soil organic matter levels and thus improve levels of soil aeration while increasing soil water holding capacity is perhaps most important in creating an environment that will reduce the incidence and severity of soil borne diseases.

PROJECT HIGHLIGHT



During the fall of 2016 Agresource was involved with supplying a Hydric Soil (high organic wetland soil) for a remediation site in Hanson, MA. The site was excavated of “dirty” material and backfilled with a hydric soil to recreate the disturbed wetland area. Over 3,200 cubic yards of material was imported to complete the site reclamation. A hydric soil is defined as a soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part (https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/use/hydric/?cid=nrcs142p2_053961). This particular location was meticulously surveyed before construction started and all vital waterways and mounds were replicated during the soil placing phase of the project. This particular hydric soil was created using a fine/silty sand to fill pore spaces and tightly hold water while binding to the organic material which was derived from leaf compost. Leaf compost provides a stable form of organic matter that will also increase the water holding capacity of the soil while providing vital slow release nutrients for the establishment of newly planted wetland vegetation without the addition of plant available nutrients.