

Compost Tea Application to Athletic Field Turf for the Improvement of Turf Quality, West Islip School District, West Islip, NY.

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Rationale

Compost tea has gained popularity in recent years as an amendment to be used in the growth and management of all types of horticultural and agricultural plants. Compost tea is a compost extract brewed with a microbial food source. The compost-tea brewing technique is an aerobic process that encourages the growth of populations of beneficial microorganisms. Claims by tea producers include significant fertilizing effects, disease management, and overall increased plant vigor with the regular use of compost teas.

In an effort to find ways to improve the health and quality of athletic field turfgrass, this study was designed to compare compost tea application to no application in IPM-managed turfgrass. The compost tea used is commercially available from Earthworks Natural Organic Products (Martins Creek, PA) and brewed and applied by the distributor/collaborator, Maxwell Turf (Jericho, NY).

Objective

To observe and record the effects of compost tea application to athletic field turfgrass managed under best management conditions, with no pesticides used for insect, disease or weed control.

Procedures

The athletic field chosen for this project was a moderate use playing and practice field that is equipped with irrigation. Best management practices were used over the entire field and included monthly aeration and overseeding with a standard mix of 30% Kentucky bluegrass and 70% perennial ryegrass (85% endophyte enhanced). The field was mowed weekly to a height of 2.5 inches in spring and fall and 3 inches during the hot summer months. An all purpose organic fertilizer (Replenish 5-4-5) was applied at a rate of 10lbs/1000sq ft. The field was divided into 12 equal-sized plots to incorporate four replications of three treatments. Compost tea treatments were applied at a standard rate in four plots and at a double rate in four plots. Four plots received no compost tea. Tea applications were made on the following dates: 6/11, 7/9, 7/22, 8/18, 9/9, and 9/24. Plots were evaluated before compost tea and control treatments as well as bi-monthly during the growing season and into late fall. A visual estimate of the percent weed coverage was made in each plot using a 3'x3' square divided into 12 equal sections that was randomly tossed inside the plot. An estimate of percent weed coverage was made for each of the 12

squares in the 3'x3' sampling square and averaged. This was done three times for each plot. Notes were made about the species of weeds present in all plots. Measurement of plant root depth was done using a soil core tool and a ruler. Each plot was randomly sampled three times for turfgrass root depth. Attempts were made to record disease incidence.

### Results

Comparisons made in 2004 included turfgrass root depth and turfgrass vigor, measured by percent weed coverage by area. Disease incidence was to be recorded, however no disease was ever widespread enough in this field to be recorded and compared. Results are based on root depths and weed counts only.

### Root depths

Measurements of root depth were taken on July 23. The average root depth of both the 1x and 2x compost tea treatments were greater than that of the control, but results were not statistically significant at the 95% confidence level.

Date	Mean root depth $\pm$ std. dev.			P value
	1x compost tea	2x compost tea	Control (no tea)	
7/23/04	2.6450 (0.5730)	2.6875 (1.0946)	2.2100 (0.2511)	0.607
9/13/04	3.1225 (0.5467)	3.1250 (0.5355)	2.5400 (0.3770)	0.209
11/11/04	2.1250 (0.2933)	2.4600 (0.3748)	2.1850 (0.2397)	0.307

There appears to be a trend of increased root depth in compost tea treatments in July and September but the differences between compost tea treatments and the control were not statistically significant. By November only the 2x treatment was higher on average, but again, the differences were not statistically significant.

### Weed density

Date	Mean weed density $\pm$ std. dev.			P value
	1x compost tea	2x compost tea	Control (no tea)	
7/23/04	23.055 (3.993)	19.445 (10.641)	15.373 (6.148)	0.386
9/13/04	22.963 (4.157)	19.628 (10.492)	15.373 (6.148)	0.389
11/11/04	22.868 (8.447)	13.798 (4.765)	13.890 (6.170)	0.140

It appears that where no compost tea was applied, weed numbers were lower, however this trend is not statistically significant. The standard 1x compost tea application rate had a higher weed density on average than the 2x rate, but this effect was not statistically significant.

## Conclusions

Some trends were observed with the application of compost tea to the athletic field, however no statistically significant results were shown this year. Trends suggest that compost tea may improve plant vigor by encouraging deeper root growth. Trends also suggest that the standard rate of tea application may not be the best for turfgrass, since weed numbers may be higher where compost tea was used at the standard rate. This may be due to the fertilization effects of compost tea giving weeds a competitive edge. However other factors that make turfgrass more vigorous, combined with compost tea application, may be a better approach for best turfgrass management. It is unknown what the effect of compost tea is on high traffic versus low traffic turfgrass, particularly when each is overseeded. Each plot in this experiment appears to have high traffic and low traffic areas. This introduces variability into the results. Teasing out the effect of wear on the turfgrass plants may lead to stronger conclusions.

## Future work

In 2005, we plan continue this project. We may subdivide the plots into high, medium, and low traffic areas and do the same amount of sampling in 36, rather than 12, plots. This would allow us to tease out the effects of compost tea on wear and reestablishment of turfgrass. We will also seek to measure turfgrass density in addition to weed cover percent and root depth.