EVALUATING ROOT DEVELOPMENT & ROOT STRENGTH WITH APEX-10 AND LEONARDITE

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ABSTRACT

Kentucky bluegrass is a common species used for athletic fields. A problem faced by many athletic field managers is to achieve a functional playing surface soon after the field has been sodded.

The objectives of this study were to examine the effects of peat humic substance made from peat and humic acid made from leonardite on the establishment rate of Kentucky bluegrass sod as determined by post-transplant root strength, root mass, tiller density, and visual quality.

Materials and Methods

Kentucky bluegrass sod was transplanted with a six inch root zone of sand meeting USGA

standards. Prior to sod transplanting expanded metal sheets with openings allowing root growth into the underlying sand, were placed on the sand surface prior to installation.

Two, 3-month runs of the experiment were conducted: Experiment #1 from April 1st through July 1st and Experiment #2 from July 15th through October 15th.

Treatments were sprayed with APEX—10, a peat humic substance offered by Nature's Wonder at a rate of 3 oz /1000 sq. ft; and Humic Acid from Leonardite sprayed at a rate of 15 g /1000 sq. ft; all control plots were treated with fertilizer alone.

Sod was fertilized with 15-30-15 supplying 1 lb N/1,000 sq. ft and watered. Treatments were applied the next day after sodding and continued every two weeks until a total of six applications were applied during each experimental cycle.

Grass was mowed twice weekly at a height of 1.5 inches, 2-weeks after sod was transplanted and continuing until 2-weeks before the end of each experimental cycle. A foliar fertilizer of

20-20-20 with micronutrients was applied to all of the plots uniformly to supply 0.5 lb N/1,000 sq. ft. Irrigation was provided on an as needed basis to prevent wilting.

MEASUREMENTS

Visual Quality ratings were taken at two and four weeks, then continued monthly thereafter. Quality ratings were made on a scale of 1 to 9 with nine being the best rating and a rating of 6 is considered commercially acceptable for a newly sodded athletic field.

Photochemical Efficiency was measured at week two and at week four and then monthly thereafter, with a dual wavelength chlorophyll fluorometer.

Shoot Density counts were made at four weeks and then again at the end of each experiment. 4-inch plugs were taken randomly from each plot and shoot growth was manually counted on each plug.

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Root Mass was measured by taking two 4-inch diameter by 6-inch plugs from each plot at two and four weeks after the initial transplanting.

Root strength was measured 4-weeks after sodding using the expanded metal root pull method. In this method, the four corners of each grate are attached to a chain and the grate is pulled vertically. The maximum force required to fully separate the sod from the sand was then recorded.

RESULTS

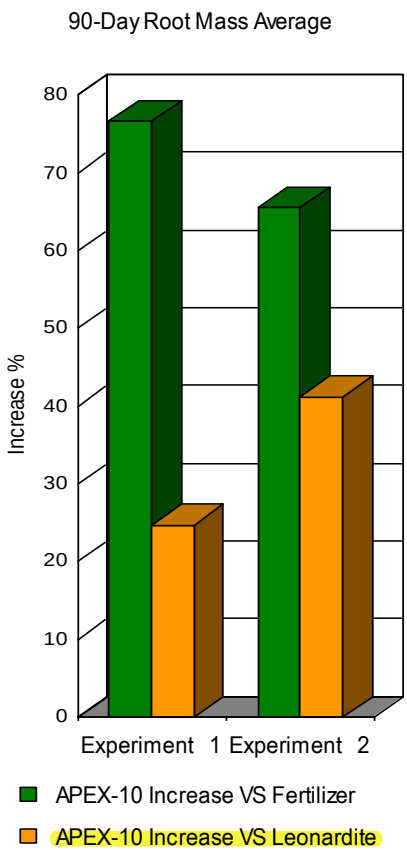
Root Mass, Root Strength, and Tiller Density, increased. Photochemical Efficiency and Visual Quality were not overly effected which is quite common in turf grown under optimum conditions and the absence of a stressful environment.

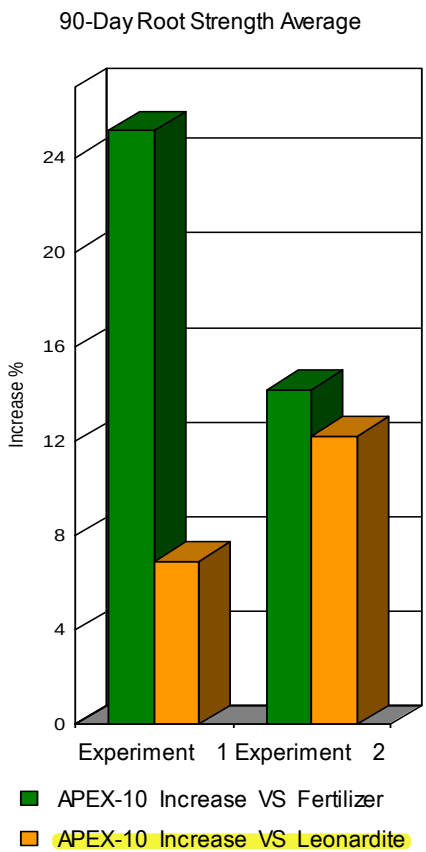
CONCLUSION

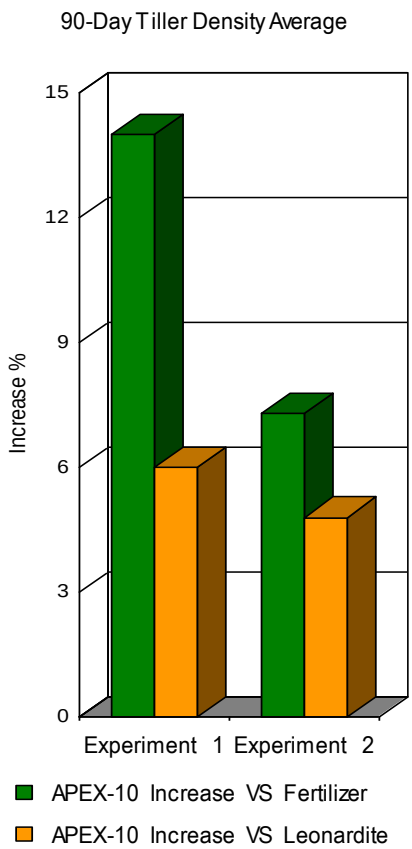
Previous reports have indicated that humic acids increase rooting due to auxin-like activities of the compounds, and our results agree with these previous reports.

As shown in the graphs below, study results demonstrate that a peat humic substance is measurably superior to humic acids made from Leonardite that have been previously reported.

There are two limiting factors turf managers face on newly sodded fields: a playable surface and stable footing. Results from this study have clearly demonstrated, that APEX-10 will provide the resources to overcome these limiting factors.







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