Greene County Fertilizer Company™

N-Ext AIR-8

0-0-5 *Liquid Aeration*

N-Ext Air-8™ Results UGA Turfgrass Research Center

Purpose of study: to evaluate the effects of N-Ext Air-8™ on turf health and soil.

Location: Athens Turfgrass Research and Education Center, Athens, GA

MATERIALS AND METHODS

Research was conducted on a mature stand of 'TifTuf' hybrid bermudagrass maintained at a 0.5 inch mowing height. The soil type was a Cecil clay loam with a soil pH of 5.9. Treatments were initiation on July 15, 2020 and were applied with a CO2 backpack sprayer. Irrigated was applied weekly with an overhead irrigation system that provided 1.5 inches of water per week. Turfgrass color (scale of 1 to 9), turfgrass quality (scale of 1 to 9), NDVI, volumetric water content (% - 3 averaged readings), and surface hardness (Clegg Hammer) were recorded weekly throughout the duration of the trial. Four 1-inch wide soil cores were removed to a depth of 6 inches at trial initiation and monthly thereafter. Cores were washed of all soil and roots were dried and weighed (g) to produce one measurement per plot. Water infiltration rates were conducted at trial initiation and monthly thereafter. A 6-inch infiltration ring was inserted into the ground approximately 1-inch. Tap water (444 mls) was poured into each cylinder and a stop watch was used to determine the amount of time it took for water to completely infiltrate the soil profile. Soil penetrometer readings to measure soil compaction deep within the soil profile were conducted at trial initiation and monthly thereafter. Three readings were taken in each plot and averaged together.

Treatments were initiated on July 15, 2020 on a 'TifTuf' hybrid bermudagrass maintained at 0.5 inches. At 28 days after initial treatment (DAIT) the two aerification treatments were the only treatments that had a reduction in soil compaction, while all of the other treatments exhibited an increase in soil compaction even greater than the non-treated check. However, all treatments except **N-Ext Air-8**™ applied alone had less of an increase in surface hardness compared to the non-treated check at 28 DAIT. Water infiltration was improved 28 DAIT in response to all treatments. More root biomass was observed in response to all treatments compared to the non-treated check. ***N-Ext Air-8**™ root mass increased by < 5% from initial measurements (AVG .215G at day 0, .2275G at day 28). At 56 DAIT, similar trends continued with respect to soil compaction and surface hardness. All treatments resulted in a decrease in surface hardness greater than the non-treated check except **N-Ext Air-8**™ applied alone 56 DAIT. All treatments exhibited longer infiltration rates than the non-treated check 56 DAIT. **At 85 DAIT this trend was completely different, N-Ext Air-8™, and both aerification treatments had infiltration rates ≤ 67 seconds, while the non-treated check had an infiltration rate of 160 seconds.** Similar trends were observed for soil compaction and surface hardness at 85 DAIT compared to previous rating dates. At the conclusion of the trial, only the two aerification treatments exhibited reduced soil compaction, surface hardness, and water infiltration rates compared to the non-treated check.

However, all treatments resulted in a greater increase in root biomass compared to the non-treated check 104 DAIT. Results from this trial suggest that **N-Ext Air-8**™ treatments are not a replacement for hollow tine aerification; **however, N-Ext Air-8™ treatments did have a positive impact of surface hardness (compaction in the upper 2 inches of the soil). N-Ext Air-8**™ treatments may have had a greater impact on soil compaction deeper in the soil profile if material was able to penetrate further*. **(See B Below)**

A) Rooting Stats

N-Ext Air-8™ alone at 6 ounces per thousand feet.

N-Ext Air8™+ N-Ext RGS™ (Compaction Cure) 6 ounces and 3 ounces per thousand feet.

Each material had 4 test plots for the purpose of repetition. Upon completion of 2020 the average root weights from each repetition were as follows:

CONTROL: **.247g**

MECHANICAL AERATION: **.305g**

N-Ext Air-8™: **.298g**

N-Ext Air-8™ + N-Ext RGS™ (Compaction Cure combo): **.375g**

B) Mechanical Aeration with and without the addition of N-Ext Air-8™.

Day of initial application PSI readings.

Plot 1 Mechanical alone Plot 2 mechanical + **N-Ext Air-8™**

Start of trial, Plot 1: 357PSI. End of trial 365PSI

Start of trial, Plot 2: 335PSI. End of trail 277PSI

BENEFITS

N-Ext Air-8™ is a valuable tool in increasing root mass, plant health, water penetration and addressing compaction in the top 2" of soil. While **N-Ext Air-8™** is not a direct replacement for mechanical aeration in heavily compacted areas, **N-Ext Air-8™** will add value to residential lawns with these key features:

- **No mess. Soil stays in its place and roots dive deeper.**
- **Greater water penetration. Easy application.**
- **No additional machinery or employees needed to achieve results.**
- **LOW COST both in manpower and material**
- **Noticeably healthier turf when used as part of an existing lawn program.**

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