

Influence of Nature's Nutrient on Bentgrass Root Growth in a 70/20/10 Sand/Peat/Soil Putting Green

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INTRODUCTION

Nature's Nutrient is a product that claims to stimulate aggressive root development in many plants. The product contends to possess over fifty trace minerals in chelated form and a liquid suspension of humic and amino acids that will dramatically increase root maturation and plant development.

This product is not yet marketed. It has been tested for five years on turf at the Noer Facility. In 1995, there appeared to be some increase in root growth when Nature's Nutrient was combined with a granular fertilization on established Kentucky bluegrass. However the test in 1997, on creeping bentgrass, provided no evidence that Nature's Nutrient favorably influenced root growth.

In 1998 the same sand-based putting green as 1997 was utilized for testing but different rates and application schedules of Nature's Nutrient were used. A different fertilizer analysis was used in 1998 and nutritional rates were increased. One of the five different Nature's Nutrient treatments (2 oz Nature's Nutrient/ M/ applied twice per month) showed significantly greater root weight on two of the test dates. On one date the treatment was paired with a low fertility variable and on the other date it was paired with a high fertility variable. None of the treatments differed on the fall test date.

The product was tested on a different bentgrass putting green in 1999. The original product and a new formulation were both tested. Root weights were taken on only two summer dates without the additional fall sampling taken the previous year. It was theorized that roots would recover in the fall with better growing conditions regardless of additional inputs. None of the treatments showed greater root mass compared to the control on the first sampling date. One treatment showed greater root weight but only at the lower fertility rate on the second sampling date. That treatment was the same one (2 oz Nature's Nutrient/ M/ applied twice per month) that showed some positive results in 1998.

Thus the marketing staff wanted to test the product one more time in 2000 to see if the results were indeed repeatable.

EXPERIMENTAL METHODS

In the 2000 study we utilized six Nature's Nutrient treatments and one control treatment. Three rates of the original formulation and three of the new formulation were used. All Nature's Nutrient treatments were applied twice per month in 2 gallons water/ M from a CO₂ backpack sprayer. All treatments in the study were tested at two nitrogen rates. The rates were 0.5 and 1.0

pound nitrogen from Spring Valley 10-1-20 fertilizer. All treatments were started on May 25th and continued for four months. The six nature's Nutrient treatments were:

Original Formulation

Treatment 1: 2 oz Natures Nutrient/ M

Treatment 2: 3 oz Natures Nutrient/ M

Treatment 3: 4 oz Natures Nutrient/ M

New Formulation

Treatment 4: 0.25 oz Natures Nutrient/ M

Treatment 5: 0.33 oz Natures Nutrient/ M

Treatment 6: 0.5 oz Natures Nutrient/ M

Nitrogen rates constituted the main plots in the study and the Nature's Nutrient treatments were applied to 3 x 3 foot subplots. The main and subplots were randomized within four complete blocks. The test area was mowed daily at 0.140 (9/64) inch. It was also irrigated 4 times per week at 100% of estimated evapotranspiration except on days with more than 1/4-inch rainfall.

Bentgrass roots were sampled on August 1st, and September 6th. Two 7/8-inch diameter cores to pea gravel depth were randomly taken from each subplot. The roots were washed from the cores, oven dried at 110 degrees Fahrenheit, weighed, ashed in a muffle furnace at 600 Fahrenheit, and then weighed again to record the difference. This difference in weight equaled the dry root weight from the two plugs in each subplot.

OBSERVATIONS

Table 1 gives the mean dry root weights of the seven different treatments at the low and high fertilizer rates. None of the six Nature's Nutrient treatments provided evidence of increased root development when compared to the control treatment in the 2000 test. This proved true on both test dates. There was also no significant difference in root weight between the high and low fertility rates on any of the treatments.

Table 1. Root Dry Weight from High and Low Fertility Rates of Seven Nature's Nutrient Treatments

Treatment	#N/M/mo	Mean dry root weight in mg	
		July 29	August 27
Treatment 1: Original formulation 2 oz NN	0.5	363.5	268.0
Treatment 1: Original formulation 2 oz NN	1.0	293.0	295.3
Treatment 2: Original formulation 3 oz NN	0.5	329.0	267.3
Treatment 2: Original formulation 3 oz NN	1.0	299.5	211.8
Treatment 3: Original formulation 4 oz NN	0.5	277.5	312.5
Treatment 3: Original formulation 4 oz NN	1.0	294.0	270.0
Treatment 4: New formulation 1 oz NN	0.5	271.0	230.0
Treatment 4: New formulation 1 oz NN	1.0	297.5	226.5
Treatment 5: New formulation 2 oz NN	0.5	268.0	238.3
Treatment 5: New formulation 2 oz NN	1.0	282.5	210.0
Treatment 6: New formulation 3 oz NN	0.5	292.5	225.3
Treatment 6: New formulation 3 oz NN	1.0	272.5	238.0
Treatment 7: Control/ No formula	0.5	347.8	250.5
Treatment 7: Control/ No formula	1.0	282.8	251.3
LSD (0.05)		97.5	70.8

CONCLUSIONS

The 2000 test, similar to 1997, provided no evidence that Natures Nutrient favorably influenced bentgrass root growth. Some favorable results occurred in 1996, 1998, and 1999 for one of the treatment rates of Nature's Nutrient, although it wasn't repeatable when paired with similar testing dates and fertilizer regimes.