

2009 Fertilizer Trial

Shane Brockhoff and Nick E. Christians, Iowa State University

Introduction

A fertilizer trial for Ajinomoto USA Inc. was conducted during the summer-fall months of 2009. The purpose of the study was to analyze the effects of several fertilizers as compared to urea and an untreated control. The study was conducted on Kentucky bluegrass maintained at a three inch height. Data collected included weekly visual quality ratings, weekly clipping mass and analysis of total nitrogen percentage in leaves. Total nitrogen percentage data were determined from combined weekly clippings four times during the study.

Materials and Methods

Research was conducted on 'Park' Kentucky bluegrass. A randomized complete block design was used with 5 ft x 5 ft plots and three replications for each of six treatments. The treatments were an untreated control, two dry experimental fertilizers, urea, AjiGrow liquid fertilizer, and corn gluten meal.

Each plot was treated with 3 lbs N 1000 ft⁻² throughout the growing season. The two dry experimental fertilizers and corn gluten meal were only applied to their respective plots twice during the study (19 May and 28 August). Urea and AjiGrow were applied three times during the study (19 May, 15 June and 28 August).

The area was irrigated with 0.5 inches of water following each application. Plots were watered to prevent moisture stress throughout the study. Treatments 2 and 3 were applied at 40 pounds per square inch (psi) in the equivalent to three gallons of water/ 1000 ft² using a CO₂ backpack sprayer with 8002 nozzles.

Clippings were collected, placed in paper bags and dried at 67 C for five days on a weekly basis beginning on 3 June and ending on 10 September. After drying, the dry clipping mass was measured.

Each week's clippings were stored at room temperature in paper bags. Once three to four weeks of clippings had been collected, they were combined, tossed and ground using a soil grinder. Uniform samples of the ground clippings were sent to Iowa University's Soil and Plant Analysis Lab for total nitrogen percentage analysis via combustion.

Quality ratings were visually noted weekly. The quality scale ranged from 9 to 1; 9 corresponds to excellent turf quality, 1 corresponds to dead turf, and 6 is considered least acceptable turf quality.

Results

Quality Ratings. The untreated control plots consistently had consistently lower quality ratings. Urea and AjiGrow treated plots received the highest ratings overall (Table 1).

Clipping Weights. The untreated control plots had significantly lower mean clipping mass when compared to other treatments on most weeks. Urea and AjiGrow plots had significantly higher mean clipping yield than all other treatments overall (Table 1).

Nitrogen Analysis. The untreated control had a significantly lower mean nitrogen percentage than any other treatment. Urea and AjiGrow clippings had the highest percentage toatal nitrogen. Dry experimental A clippings' nitrogen percentage was less than urea and AjiGrow plots, but not less than dry experimental B and corn gluten meal clippings (Table 1).

Table 1. Overall means for quality ratings, clipping weights, and percentage total nitrogen.

Fertilizer Treatment	Quality	Clipping Weight (g)	% Total N
Control	6.4c ^z	5.00 c	2.494 c
Urea	8.1a	11.4 a	2.990 a
AjiGrow	8.0a	11.3 a	2.966 a
Dry Experimental A	7.5b	9.00 b	2.759 b
Dry Experimental B	7.5b	9.60 b	2.809 ab
Corn Gluten Meal	7.5b	8.50 bc	2.849 ab

^zMeans within columns followed by the same letter are not different according to Fisher's Protected LSD_{0.05}.