

The Evaluation of an Experimental Fertilizer Grass Blast

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Summary

An experimental fertilizer, Grass Blast, was compared with an industry standard product, Scott's Turf Builder. Two applications were applied on July 4 and August 6, 2008. The products were evaluated for colour, quality and clipping yield. Grass Blast performed similarly to the Scott's Turf Builder in the three measured factors. As far as consistency was concerned Grass Blast produced a more consistent response than did the Scott's Turf Builder for both colour and clipping yield.

Methodology

Plots were laid out on a Kentucky bluegrass/fescue area at the Prairie Turfgrass Research Centre located at Olds College, Olds, Alberta, Canada. Plot sizes were 1 by 2 metres and laid out in a Randomized Complete Block Design. The performance of the Grass Blast fertilizer was compared against an industry standard as well as an unfertilized control. Rate of application of the fertilizers were 1 lb of actual nitrogen per 1000ft². The initial application of fertilizer was applied on July 4 and a second application was applied on August 6. The application of the granular fertilizers was made using a Scott's drop spreader, which was calibrated to apply the appropriate amount of each fertilizer. Colour and quality, as well as clipping yields, were rated weekly.

For colour ratings, 1 indicated a brown dormant turf and 9 indicated a dark green turf. The individual treatments were assessed for consistently superior colour, i.e. a treatment was considered superior when it had an 'a' ranking when rated on a weekly basis. Mean standard deviation was considered to be a measure of consistent colour i.e. the higher the percent, the greater the deviation from the mean value.

Density and area cover were combined with colour to determine quality ratings. Density, which is a subjective rating of shoots per unit of area, was based on 1 was poor density and 9 was superior density. The area cover rating was rated on a 1-9 basis where 9 equals complete cover and 1 indicates a complete lack of cover. Bare areas and/or weed encroachment reduced the rating values. Mean standard deviation for quality was a measure of consistent colour, density and area cover, i.e. the higher the percent, the greater the deviation from the mean value.

Clippings were collected with a reel mower that made one pass down the centre of each plot. Clippings were then dried for 48 hours at 70°C in a drying oven and weighed. Clipping yield values were recorded as grams of clippings per square meter per week. In order to determine the consistency of release of the various fertilizers the mean standard deviation was determined. Mean standard deviation is a measurement in grams of the deviation from the mean value based on the weekly clipping yields. The lower the number the more consistent was the release of the individual fertilizers.

Generated data was first analyzed using an Analysis of Variance (ANOVA) test. When statistically significant treatment differences are present, least significant difference

(LSD) values are presented at the bottom of each table. Treatment differences that were greater than the LSD value indicate a strong probability that the differences were as a result of the treatment and did not occur by chance. Therefore, within a column, if the same letter follows numbers there is no significant difference between treatments.

Results

Initially, four days after application (4 DAT) both the Grass Blast and the Scott's Turf Builder had better colour, although they were not statistically significant (Table 1). Over ten weeks of rating the Grass Blast fertilizer was statistically superior to the untreated control except on one occasion late in the trial. The Grass Blast was equal in performance to the Scott's Turf Builder, on all but one rating date (Table 2). There was a more consistent colour rating for the Grass Blast in comparison to the Scott's Turf Builder as indicated by the smaller percentage of standard deviation.

This data indicated that the Grass Blast fertilizer showed good early colour and then maintained it for the duration of the trial.

Table 1 - Weekly turf colour Grass Blast fertility trial, 2008.

	4 DAT	Week 1	Week 2	Week 3	Week 4	Week 5
	1 - 9 scale					
Grass Blast 8-6-5	6.0a	6.5a	6.0b	6.7a	7.0a	7.5a
Scotts Turf Builder Pro 31-3-8	6.0a	7.2a	6.7a	7.2a	6.7a	8.0a
No fertilizer	5.0a	5.0b	5.2c	5.7b	5.5b	5.5b
LSD _{0.05} =	n/s	0.8	0.6	0.5	0.6	0.8

* Values that have the same letter as a suffix are not significant from each other.

	Week 6	Week 7	Week 8	Week 9	Week 10
	1 - 9 scale				
Grass Blast 8-6-5	7.2a	7.5a	7.0a	7.0a	7.0a
Scotts Turf Builder Pro 31-3-8	7.7a	8.0a	7.5a	7.0a	7.0a
No fertilizer	6.0b	6.2b	5.5b	6.0a	5.2b
LSD _{0.05} =	0.6	0.8	0.8	n/s	0.4

* Values that have the same letter as a suffix are not significant from each other.

Table 2 – Consistent superior performance and standard deviation for colour , 2008.

	Superior Turf Colour Score	Standard Deviation
		1 – 9 scale
Grass Blast 8-6-5	9 out of 10 weeks	51%
Scotts Turf Builder Pro 31-3-8	10 out of 10 weeks	75%
No fertilizer	1 out of 10 weeks	26%

Quality ratings were not statistically different until the fourth week of the trial. However, there were differences as early as week one, but they were not statistically significant due to variation within the replications. The Grass Blast was equal to the Scott's Turf Builder in quality on all rating dates. There was no difference in the standard deviation between the two fertilizers.

This would indicate that the Grass Blast produced equal turfgrass quality to the Scott's Turf Builder for the duration of the trial.

Table 3 - Weekly turf quality for Grass Blast fertility trial, 2008.

	4 DAT	Week 1	Week 2	Week 3	Week 4	Week 5
	1 - 9 scale					
Grass Blast 8-6-5	6.0a	7.0a	6.0a	7.0a	7.0a	7.5a
Scotts Turf Builder Pro 31-3-8	6.0a	7.0a	6.2a	7.0a	7.0a	8.0a
No fertilizer	5.7a	6.0a	6.0a	6.0a	6.2b	6.5b
LSD _{0.05} =	n/s	n/s	n/s	n/s	0.4	0.8

* Values that have the same letter as a suffix are not significant from each other.

	Week 6	Week 7	Week 8	Week 9	Week 10
	1 - 9 scale				
Grass Blast 8-6-5	7.2ab	7.0a	7.0ab	7.0a	7.0a
Scotts Turf Builder Pro 31-3-8	7.7a	7.2a	7.5a	7.0a	7.0a
No fertilizer	6.7b	6.5a	6.5b	6.5a	6.2b
LSD _{0.05} =	0.9	0.8	0.8	n/s	0.4

* Values that have the same letter as a suffix are not significant from each other.

Table 4 – Consistent superior performance and standard deviation for quality, 2008.

	Superior Turf Quality Score	Standard Deviation
		Mean of three quality factors
Grass Blast 8-6-5	10 out of 10 weeks	52%
Scotts Turf Builder Pro 31-3-8	10 out of 10 weeks	52%
No fertilizer	5 out of 10 weeks	39%

Clipping yield data is quite variable from week to week (Table 5). This is as a result of climatic variations and also the performance of the fertilizers. When turfgrass breaks dormance in our climate a flush of growth occurs. It would appear that four days after treatment, this effect was still evident. Otherwise, clipping yields were quite consistent for the untreated controls. The increase in yield for the fertilized plots is likely due to the performance of the fertilizers.

Clipping yields were similar between the two fertilized treatments for each week of the trial (Table 6). By week nine and ten the effect of cool fall temperatures on clipping yield was evident. At no time was the Scott's Turf Builder superior to the Grass Blast, and the total clipping yields were very similar. The standard deviation was less for the Grass Blast than the Scott's Turf Builder which would indicate that it releases its nitrogen more consistently.

The data shows that the Grass Blast performed equally to the Scott's Turf Builder for clipping yield and was superior for consistent yield.

Table 5 - Weekly clipping yields for Grass Blast fertility trial, 2008.

	4 DAT	Week 1	Week 2	Week 3	Week 4	Week 5
	g/m^2					
Grass Blast 8-6-5	15.5a	6.2a	6.7a	10.2a	3.7a	12.5a
Scotts Turf Builder Pro 31-3-8	14.0a	7.0a	7.7a	9.5a	3.2a	15.0a
No fertilizer	13.0a	2.2a	3.0a	3.7a	2.0a	4.7b
LSD _{0.05} =	n/s	n/s	n/s	n/s	n/s	5.8

* Values that have the same letter as a suffix are not significant from each other.

	Week 6	Week 7	Week 8	Week 9	Week 10
	g/m^2				
Grass Blast 8-6-5	10.5a	11.0a	11.5a	2.5a	9.0a
Scotts Turf Builder Pro 31-3-8	15.7a	15.2a	13.7a	2.7a	9.5a
No fertilizer	2.0b	2.0b	2.2b	2.0a	2.2b
LSD _{0.05} =	6.1	6.0	5.5	n/s	4.7

* Values that have the same letter as a suffix are not significant from each other.

Table 6 – Consistent superior performance and standard deviation for clipping yield.

	Superior Dry Matter Yield	Total Clipping Yield Accumulated Means	Standard Deviation
		grams	grams
Grass Blast 8-6-5	10 out of 10 weeks	84	3
Scotts Turf Builder Pro 31-3-8	10 out of 10 weeks	99	5
No fertilizer	6 out of 10 weeks	26	1

The graphs, which are a separate attachment, show that there was better and more consistent performance after the second application of fertilizer, particularly for clipping yield. The colour graph illustrates a consistent colour rating from week to week for the Grass Blast in comparison to the Scott's Turf Builder. Quality rating graphs shows a similar response with a spike in quality at week eight, no doubt due to environmental conditions.