

BIO-ORGANIC TURFGRASS AMENDMENTS

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Several years ago, the Ringer Corporation of Eden Prairie, MN submitted to the Department of Crop and Soil Sciences at Michigan State University several new turf products for testing. The products, termed bio-organic turfgrass amendments, consist of natural organic nitrogen components (mainly yeast) and biological inoculum, principally soil fungi and bacteria. The claims made by Ringers cited the bio-organics as soil amendments which would serve as adequate turfgrass nitrogen carriers while enhancing the decomposition of turfgrass thatch. The objectives of the university experimentation were to assess the sward response and existing thatch response of Kentucky bluegrass (Poa pratensis L.) to repeated applications of the Ringer products.

Experimentation was begun in 1984 at the Hancock Turfgrass Research Center in East Lansing, MI. Nitrogen response field plots were constructed on a seeded blend of Kentucky bluegrass. Plot size was 48 square feet. The experimental design was a randomized complete block with 3 replications. Treatments were factorially arranged and consisted of Ringer's Lawn Restore (10-3-3), C.I.L. sulfur coated urea (32-0-0) and soluble C.I.L. urea (46-0-0) applied at annual rates of 2, 4 and 6 lbs N/M. Treatments were applied on 15 May, 15 June, 15 July and 15 September during 1984 and 1985. Experimental samples were subjected to laboratory analysis involving determinations of tissue nitrogen content, tissue chlorophyll content and clipping harvest yield. Visual quality ratings (9 = superior turf) were also performed weekly over both seasons. Thatch response plots were constructed on a section of sodded Kentucky bluegrass originally grown on a Houghton muck soil. The sod was overlain on a fairly compacted sandy clay loam sub-soil several years earlier. Plot size was 24 square feet. The experimental design was a randomized complete block with 3 replications. Treatments were factorially arranged and consisted of Ringer's Lawn Restore (10-3-3), Ringer's Lawn Rx (3-1-1) and Ringer's C-50 (10-3-3) applied at rates of 0, 2, 4 and 8 lbs N/M per application. Treatments were applied one time in 1984 and four times in the 1985 season. In the fall of 1985, subsamples from each plot were harvested and subjected to various measurements. Measurements included thickness determinations, cellulose and lignin determinations, moisture holding capacity and earthworm population analyses.

Results of the nitrogen response trial were as expected (see Table 1). Turf treated with Lawn Restore compared favorably to turf treated with sulfur coated urea on all test variables at all rates. Turf treated with Lawn Restore did not compare as well to turf treated with soluble urea, which remains an industry standard. The thatch trial gave somewhat unexpected results. As rates of treatment application increased, regardless of type of product, thatch thickness decreased, the proportion of cellulose increased while the proportion of lignin decreased, moisture holding capacity increased and earthworm populations significantly increased.

As a general conclusion, experimentation showed that the Ringer products serve as adequate nitrogen carriers. Turf treated with the Ringer products were not as effective as soluble urea in producing the desirable

characteristics associated with the nitrogen response. Regarding thatch response, when applied at the experimental rates, the Ringer products effected a change in existing Kentucky bluegrass thatch. It was never adequately determined whether the products alone were responsible or whether the activity of the earthworms, using the bio-organics as a food substrate were the primary effectors. More than likely the earthworms in conjunction with the Ringer products acted together producing decay.

Table 1. Turfgrass nitrogen response variable summarization comparing the Ringer Corporation's bio-organic amendment lawn restore to urea and sulfur coated urea.

		<u>NIT</u>	<u>CHL</u>	<u>CLP</u>	<u>VRT</u>
Lawn Restore	2# N/M	3.2	7.9	9.4	7.2
	4	3.4	8.3	14.1	7.6
	6	3.7	8.7	18.2	8.1
Urea	2	3.3	7.9	10.0	7.4
	4	3.7	8.9	16.1	8.3
	6	4.0	9.3	19.6	8.8
S.C.U.	2	3.2	7.8	9.3	7.3
	4	3.4	8.2	12.3	7.8
	6	3.7	8.4	17.3	8.3
LSD 0.05		0.2	0.9	4.5	0.6

NIT = % tissue nitrogen

CHL = milligrams chlorophyll per gram dried clippings

CLP = grams dried clippings per square meter plot area

VRT = visual quality ratings (9 = superior)