

TURF RESPONSES TO BIO-ORGANICS

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Ringer Corporation of Eden Prairie, MN. recently submitted several newly marketed bio-organic turfgrass amendments to Michigan State University for evaluation. The products, biologically fortified organic amendments containing microbial inoculum (mainly soil fungi and bacteria), are postulated to enhance thatch and pathogen control while providing essential nutrients. The objective of these evaluations was to document the product nitrogen release as related to plant uptake, and to characterize any thatch decomposition associated with product use.

Research was conducted on seeded Kentucky bluegrass at the Hancock Turfgrass Research Center during 1984 and 1985. Greenhouse and growth chamber experimentation provided supplemental information. Shoot nitrogen and chlorophyll contents, clipping yield and visual quality as affected by carrier type and rate of products, urea and sulfur-coated urea at rates ranging from 2 to 6# N/M/Yr applied 4 times annually. Thatch thickness, organic matter content, lignen content, bulk density, water retention, microbial activity and earthworm populations as influenced by several rates of the Ringer products were also determined. Rates ranged from 0# to 8# N/M/application. Treatments were applied 5 times in the course of 12 months in 1985.

More nitrogen response differences were observed when turf treated with the bio-organics was compared to turf treated with soluble urea. Urea treated turf ranked better in all testing, regardless of rate. Fewer differences were observed in comparison to sulfur-coated urea treated turf, which was expected, since release rate of the bio-organic and the S.C.U. nitrogen is similar.

When applied to thatched field turf, the amendments produced increases in thatch earthworm populations while significantly decreasing thatch thickness. The decrease in thickness led to accumulation of thatch lignin and a decrease of thatch cellulose, indicative of advancing decay. Decreased thickness also led to increased water retention. It was never adequately determined whether the bio-organics alone or increased worm numbers associated with the products were responsible for enhanced decay. It was suggested that the contribution from the earthworms was substantial. However, when earthworms were controlled (i.e., in the greenhouse), light and frequent (i.e., 0.5# N/M/week) applications effected a significant decrease in thatch thickness over heavier application rates (i.e., 2.5# N/M/week) regardless of product.

As a general conclusion, the bio-organics were shown to be acceptable turfgrass amendments, providing nitrogen while enhancing thatch decay to some extent. With nitrogen response, data are very clear and imply that the Ringer products Lawn Restore and C-50 are very comparable to S.C.U., but do not compare as well to urea. For thatch evaluations, rates of application were considered excessive by conventional standards. It is uncertain what effects conventional rates would provide. The point is that with the experimental rates, thatch was reduced in less than one year. When thatch was drastically reduced (i.e., at the higher rates), the overall health and vigor of the turf was also reduced. Crown tissue became exposed. Plants became spindly and tended to lean over. Growth became prostrate as opposed to upright. However, health and vigor was better maintained at the low rates (i.e., 2# N/M/app.)

suggesting light, frequent applications may be more desirable. More research at more conventional rates is needed to substantiate longer term effects of the amendments to soil and turf.

During May 1986, plots were begun on Emerald creeping bentgrass at the Hancock Turfgrass Research Center for dollar spot management. The Ringer products, along with Milorganite, Strengthen and Renew, Green Magic, urea and 20-0-2 were applied at rates of 1# N/M/application. Applications were made (and are being continued) at monthly intervals. The number of spots per plot are tabulated and analyzed prior to each treatment. Data is not conclusive at this time since only 3 counts have been made to date.