

FINAL REPORT

To determine the effect of Oxy-Rush on turf quality, turf colour, disease incidence and thatch levels of managed amenity turf

STRI

For: Agronomic Services Ltd
Spring House
Grewelthorpe
Ripon
HG4 3BT

Report date: 12 December 2011

Study director: Dr Christian Spring, Senior Research Officer and Head of Soils Laboratory



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Soil organic matter by loss on ignition

The level of thatch/organic matter was determined by loss on ignition. Cores were taken from the trial area and assessment made at 0-20 mm and 20-40 mm depths. A composite sample from across the trial area was taken prior to initial treatment application. Fully replicated samples were taken one month after each treatment application.

Black layer

Whilst taking the last batch of soil cores for soil organic matter determination the presence or absence of black layer in any of the plots was noted.

Results

Disease

There were statistically significant differences in the abundance of microdochium patch disease between the treatments on three out of seven assessment dates (Table 1). On each of these dates the plots treated with Oxy-Rush had significantly less area of the plot affected by microdochium patch disease.

During the first two months of the trial there was some red thread present in the plots (Table 2). There were no significant differences between any of the treatments on any of the assessment dates.

Visual merit

For visual merit there were statistically significant differences between the individual treatments on three of the seven assessment dates (Table 3). On each of these three dates, the Oxy-Rush treated plots had greater turf merit scores than the untreated plots. Even on those dates when statistically significant differences were not recorded, the trend was for the Oxy-Rush treated plots to have slightly higher average visual merit scores. Throughout the whole trial the quality of the turf was at all times acceptable for putting green turf.

Visual turf colour

During the trial turf colour scores were acceptable and highly representative of golf green turf (Table 4). On three out of the seven assessment dates the plots treated with Oxy-Rush had better colouration compared to the untreated plots. Only on 21 October were any significant differences noted between the two Oxy-Rush treatments, with the treatment receiving irrigation post application having slightly better colour scores compared to the non-irrigated treatment.

Chlorophyll index

The statistical analysis was not able to identify any significant differences between the three treatments (Table 5). However, there was a consistent trend for the plots treated with Oxy-Rush, both with and without irrigation, to have higher chlorophyll indices than the untreated plots.

Phytotoxicity

Throughout the trial no phytotoxic effects were observed from the application of Oxy-Rush, (Table 6).

Soil organic matter by loss on ignition

A number of soil cores were taken from each plot one month after each Oxy-Rush application and the quantity of soil organic matter determined at 0-20 mm and 20-40 mm depths (Tables 7 and 8). The results indicate that on each of the three testing dates there were statistically significant differences.

Black layer

During the collection of the final set of organic matter cores the presence of any black layer in the soil profile was monitored (data not shown). No black layer was identified in any of the trial plots during this assessment.

Discussion

After initial application with Oxy-Rush there was a period of six weeks before any statistically significant differences were observed between any of the treatments. From this point onwards, there was a consistent trend for plots treated with Oxy-Rush, both with and without irrigation, to have less microdochium patch disease, greater visual merit and turf colour scores in comparison to the untreated plots. Whilst not statistically significant, there was a tendency for Oxy-Rush treated plots to have greater chlorophyll indices. It was reported that Oxy-Rush does not contain any significant sources of nitrogen, therefore the improvements in turf colour and visual merit could be the result of nutrients being released from the large accumulations of soil organic matter present in the trial plots. Any breakdown in organic matter did not manifest itself in measurable reductions through loss on ignition analysis. The Oxy-Rush may have started to facilitate the breakdown of organic matter but due to its heterogeneous distribution in the soil differences could not be detected in these data as a result of the relatively high levels of background noise.

It was interesting to note the lower concentrations of microdochium patch disease in plots treated with Oxy-Rush compared to the untreated, especially when disease pressure was relatively high on the 23 September. The most likely explanation for the reduced disease presence is the improved turf health of the Oxy-Rush treated plots leading to great resistance to the fungal pathogen.

The evidence from this trial would suggest that the application of Oxy-Rush does affect turf health and might have an effect on facilitating the decomposition of soil organic matter. However, without direct evidence in the form of measurable reductions in soil organic matter it is difficult to say with any certainty if there is a definitive relationship. We believe that there would be significant benefit to either continuing with the trial for a longer period of time to further allow the Oxy-Rush more time to act upon the high levels of organic matter present in the plots, or perhaps design a trial with an aeration treatment as a split plot design. The latter approach would still allow the effect of Oxy-Rush by itself to be assessed against untreated turf, but would also allow the combined effect of Oxy-Rush with a basic aeration programme to be evaluated. By including a aeration treatment it should also facilitate the percolation of the Oxy-Rush deeper into the thatch dominant layer of the profile, allowing more organic matter to come into contact with Oxy-Rush.