

**Soil Technologies Corp.
Research and Development Department**



SOILTECH
Teaming With Biology

Research Report

Title: Field Evaluation of Microbial Inoculants at Cornell University

Location: R.T. Jones Golf Course at Cornell University

Principal Investigators: Eric B. Nelson, Associate Professor
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Crop: Creeping Bentgrass, *Poa annua*

Date: 1998 Season

Abstract:

The purpose of this study was to evaluate microbial inoculants for turfgrass disease control. Bac-Pack¹ and conventional treatments were tested for efficacy. Throughout the season three diseases were documented, Pythium, Brown Patch, and Anthracnose. Both the conventional treatment and Bac-Pack protocols had significant results in controlling the disease.

Methods:

Treatments were arranged in a split plot randomized complete block design. Subplots do not consist of superimposed treatments or conventional golf course management treatments. Inoculant treatments were randomized within three replicate blocks, within each major subplot. Control plots consisted of untreated turf (no inoculant treatment.) Conventional treatments were applied to half of the plots. Bac-Pack was applied to the other plots as a regular scheduled protocol. Plots were rated between July 16 and August 11 on a scale of 0-10 where 0 = no symptoms and 10 = 100% of the plot area symptomatic.

Conventional Treatment Protocol:

Banol[®] was applied on June 25 at a rate of 1.5 oz/1000 ft². Touche[™] was applied on June 25 at a rate of 2 oz/1000 ft². Manicure[®] was applied on July 17 and August 8 at a rate of 5 oz/1000 ft². Heritage[®] was applied on August 5 at a rate of 1lb/ac.

Bac-Pack Treatment Protocol:

Bac-Pack inoculant was applied at 14-day intervals at a rate of 1 oz/1000 ft².

¹Bac-Pack is a soil microbial inoculant.

Bac-Pack is manufactured by Soil Technologies Corp. Fairfield, IA USA.

Results:

A number of different diseases appeared on plots throughout the 1998 season. It should be noted, however, that 1998 was a particularly unusual year in that expected disease such as dollar spot never showed up and other diseases such as Pythium root rot appeared at an extremely odd time of year.

In mid-July, following the first application of treatments, small reddish-brown patches appeared on plots. These symptoms were subsequently diagnosed as Pythium root rot. Disease ratings ranged from 1-6. This indicates the considerable level of variability throughout the experiment. The disease rating charts can be seen below. Bac-Pack showed reduced levels of disease compared with the untreated controls and conventional sprays.

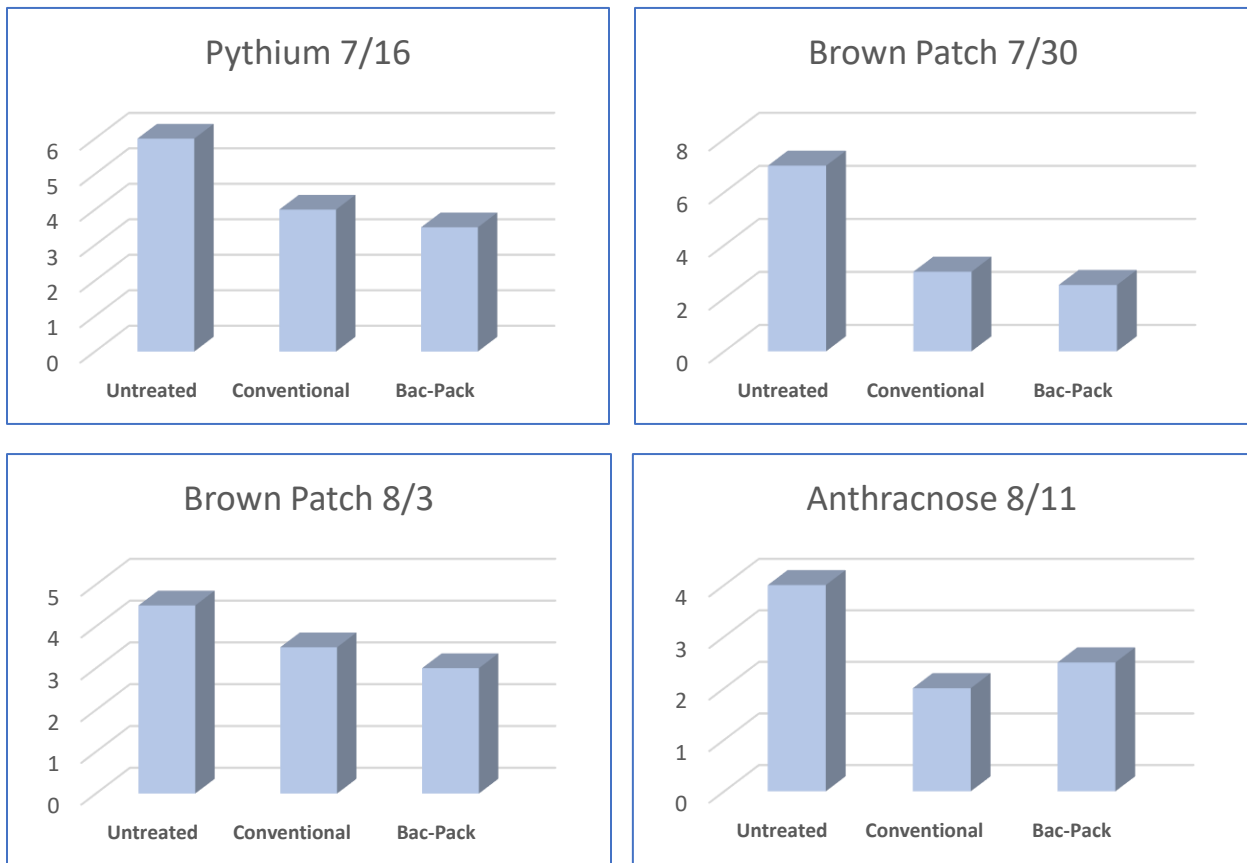


Diagram 1: Disease Rating Carts

Toward the end of July, Pythium root rot symptoms had disappeared and brown patch symptoms were apparent. A number of significant treatment effects were observed at both the July 30 and August 6 rating dates. Bac-Pack showed a significant suppressive effect toward Brown Patch on the July 30 rating date. By August 6, Brown Patch symptoms were beginning to disappear (as indicated by ratings of untreated plots.) At this rating date, the Bac-Pack treatment was less diseased than the untreated control plots and the conventional treatments. Anthracnose became prevalent on experimental plots toward the middle of August. Plots

treated with Bac-Pack showed reduced levels of Anthracnose compared with the untreated control plots.

Conclusions:

The field trial results of this study indicate that Bac-Pack has the potential to control Pythium, Brown Patch, and Anthracnose. The control of these diseases in this study by Bac-Pack was equivalent or better than the conventional treatments available for use on turf grass.