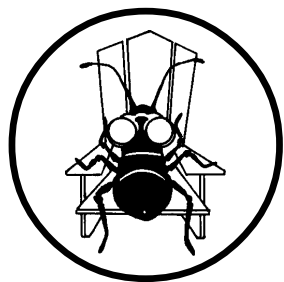


Your Daily Microbe: Does the BioJect System Work?



Pest Watch

The objectives of the study were: 1) evaluate the ability of BioJect to suppress dollar spot on fairways, 2) evaluate the ability to suppress nematodes on greens, and 3) evaluate the ability to distribute the bio-control organism through the system.

Public concern for pesticide use has spurred the development of alternative technologies for pest management. Golf course superintendents are regularly inundated with sales material that touts the myriad benefits from using a particular product. In some cases, actual research data is available, however, many times the data is from controlled laboratory studies or with plant material other than turf. While this should not always disqualify the data, studies under field conditions that generate consistent measurable responses are clearly lacking.

Recently, the BioJect System was developed by Ecosoil, Inc. that is capable of delivering an organism, proven in the laboratory to provide biological control of dollar spot, brown patch and pythium diseases of turf. This system is currently being used on hundreds of golf courses in the United States, however, actual performance data has not been available. To this end, researchers at the University of Massachusetts in cooperation with three golf courses, conducted evaluations of the BioJect System at their facilities. The objectives of the study were: 1) evaluate the ability of BioJect to suppress dollar spot on fairways, 2) evaluate the ability to suppress nematodes on greens, and 3) evaluate the ability to distribute the bio-control organism through the system.

Dollar Spot Trial

For the dollar spot trial, daily application of the bio-control organism was made following a

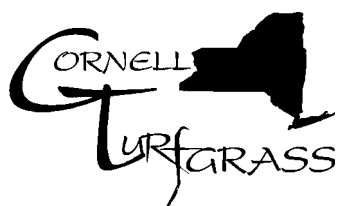
12 hour fermentation cycle. **The organism was applied with a watering can between the hours of 9 PM and 12 AM, to simulate nightly irrigation, not through the BioJect System.**

Dollar spot levels in the untreated plots were significantly greater than the action threshold that would require treatment (5 spots per 18 square foot plot). Dollar spot levels did not reach the action threshold in BioJect treated plots on the Orchards Golf Course with mostly bentgrass and Twin Hills Golf Course with a low-maintenance Kentucky bluegrass blend. In fact, BioJect treatments were similar to Daconil and Banner fungicide programs. However, under more severe disease pressure experienced on mostly annual bluegrass at the UMass facility, the BioJect treatments, while providing 86% control as compared to untreated plots, was well above threshold levels. Still, the BioJect treated plots that only received Daconil or Banner when threshold levels were reached, reduced fungicide use approximately 70 to 80% as compared to fungicide treated plots without BioJect treatment.

Nematode Trial

Nematode treatments were applied to a 75 year old annual bluegrass/bentgrass putting green with high populations of certain parasitic nematodes. Applications methods were similar to those made to fairways in the dollar spot experiments, relative to fermentation and watering

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BioJect System

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can. Except for two dates, for one species (*Tylenchorhynchus* spp.), neither the BioJect, nor Nematicur treatments significantly suppressed nematode populations.

Distribution Trial

The experiment to evaluate distribution was conducted on three golf courses in eastern Massachusetts. Population counts were taken of the bio-control organism after the fermentation cycle and various distances from the pump house. In every case where irrigation water was sampled from the sprinkler heads, populations were often 1000 times less than at the pump. Also, the lack of disease incidence on the courses at the time of the study limited the researchers ability to determine the actual impact of reduced population amounts on control.

Summary

In summary, the TX-1 organism developed by Dr. Joe Vargas at Michigan State University, when applied in the correct amount is capable of eliminating or reducing the need for some fungicides. However, the inadequacies of the BioJect System to deliver the populations needed for control leaves many questions unanswered. So the answer at this stage to whether the BioJect works or not is an ambiguous yes and no.

(Adapted from: Bresnahan, J.J. and J.A. Drohen. 1999. Evaluation of the BioJect System for the control of fungal and nematode pathogens in a golf course environment—1998.)

FRANK S. ROSSI
CORNELL UNIVERSITY TURFGRASS TEAM

When applied in the correct amount TX-1 is capable of eliminating or reducing the need for some fungicides. However, the inadequacies of the BioJect System to deliver the populations needed for control leaves many questions unanswered.

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