

Turf Disease Research Update: Sugar With Your Tea?

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There are increasing societal pressures to limit the use of synthetic pesticides in urban environments. More municipalities are likely to ban the use of pesticides for cosmetic purposes, whether or not there is toxicological justification. In light of this trend, there is a need to seek alternatives. Although biological controls with microbial antagonists have shown promise for the control of pests, these products must also undergo very stringent reviews by the federal government and the costs of registration are prohibitive in Canada.

Opponents of synthetic pesticide use often list alternatives which they claim are as effective if not better than synthetic chemicals. There is a need for rigorous assessment of these claims with controlled testing of the efficacy of home or folk remedies. Substances which have recently been proposed for turfgrass disease control include:

- hydrogen peroxide (or hydrogen dioxide) used every few days to control foliar diseases
- molasses or sugars used weekly to stimulate microbial activity
- compost teas based on fermentation extracts from various composted materials

Summer 2004 Trials

In summer 2004, we conducted trials to look at the effects of some of these home remedies on turfgrass disease control. Two of the substances tested can be easily purchased at the local supermarket: hydrogen peroxide was used at 1% and 3%, and molasses was used at 1% and 5%. Both of these substances were applied at two different rates weekly from June through September 2004 to test their efficacy against dollar spot disease development in field plots at the Guelph Turfgrass Institute pathology green. This research green was constructed in 1994 to USGA specifications and sown with creeping bentgrass.

In addition to the peroxide and molasses, compost teas were generated and tested against dollar spot disease. There are many different recipes for making compost teas, but the one we tried was created by diluting the compost in two-fold water and aerating the solution using aquarium bubblers.

We tested various types of starter composts: cattle, sheep and turkey manure (each tested separately), mushroom compost, and turf topdressing made with compost. Teas were made from each of these composts, and the number of micro-organisms was assessed for each tea on a daily basis up to 10 days.

After looking at micro-organism counts, we decided to use compost teas fermented for seven days, and applied these in the field weekly from June through September 2004. The plots were inoculated with the dollar spot fungus monthly to promote disease and the plots were evaluated weekly.

Results

All treatments showed some level of suppression compared to our inoculated plots which were otherwise not treated. Molasses and peroxide showed the lowest levels of suppression (25% to 38% disease reduction), compared to the compost teas. For example, on August 30, 2004, there were an average of 71 spots in each of the four inoculated control plots (0.5 m by 0.5 m), compared to 48 spots per plot for the 1% molasses treatment, which gives a disease reduction rate of 32%.

The compost teas provided significantly higher levels of suppression: cattle

(63%), topdressing (66%), sheep (70%), turkey (72%) and mushroom (86%). The number of spots per plot for the mushroom compost tea plots averaged 10, as compared to 11 spots in neighbouring plots which had been treated with the fungicide



Daconil 2787 at 190 ml product / 100 m². Among these treatments, the mushroom compost tea showed the greatest promise and should be tested further.

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Photo: Fresh brews of compost teas were prepared weekly by placing solid composts in these plastic containers and then adding twice the volume of water. To create an aerobic tea that encouraged the growth of micro-organisms, aquarium pumps with bubbling airstones were used for seven days at 25°C with daily stirring. The liquid was then strained out and applied to the turfgrass plots.