Large-Scale Field Testing of Stropharia Mycelium Buffer Strips for Harmful Algae Bloom Prevention, Year 5

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Harmful Algae Blooms (HABs), which are fatal to aquatic ecosystems, human health, and water-reliant industries, largely occur because of unnatural increases of Nitrate and Phosphate and are an increasing problem globally. The long-term goal of this 6-year study is to develop a low-cost and eco-friendly method for preventing HABs. Results from previous phases of this study along with other studies suggest that Stropharia (S. rugosoannulata) Mycelium, which is the root structure of the Stropharia mushroom, has water filtration properties. The purpose of the 5th phase of this research was to determine the effectiveness of Stropharia Mycelium Buffer Strips for Nitrate and Phosphate removal from runoff for HAB prevention when implemented in the field at a local golf course, and to analyze their impact on the pH of runoff. To test the hypothesis, 3x 30ft long by 2ft wide by 1ft deep Stropharia Mycelium patches (buffer strips) were established at strategic downslopes around a pond on the course. Following rainfall and artificially fertilized runoff events, runoff samples were collected downstream of the buffer strips and their pH, Total Nitrogen, and Phosphate concentrations were compared with those of samples collected in similar regions downstream of non-buffer strip areas. From samples collected thus far, it was found (without statistical significance) that Stropharia Mycelium Buffer Strips can reduce Phosphate concentrations in runoff from rainfall events by approximately 31 percent and reduce Total Nitrogen concentrations in runoff from fertilized runoff events by approximately 45 percent. Further samples will be collected over the next few months to determine the long-term effectiveness of the buffer strips and their impact on pH.

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