BioChar Barriers

Lake Hopatcong, NJ Experiment

https://princetonhydro.com/biochar/

Treating & Preventing HABs

The use of biochar, a pure carbon, charcoal-like substance made from organic material, to enhance soil fertility is thought to have originated over 2,000 years ago in the Brazilian Amazon. Archaeological sites indicate populations of native Amazonians used biochar to amend nutrient-poor soils to increase agricultural productivity. Biochar is generally produced through a process called pyrolysis. Pyrolysis is the decomposition of organic matter brought about by high temperatures (typically 800°F) in an environment with limited oxygen. The word pyrolysis is coined from the Greek-derived elements pyro “fire” and lysis “separating.”

Recently, biochar has received tremendous attention and its usage has moved beyond traditional agricultural and landscaping soil amendment applications. It is being championed as a useful technique for soil restoration, carbon sequestration, and - the one we’re most excited about - water quality management.

That’s right! Biochar has been shown to improve water quality by removing dissolved phosphorus from fresh waterbodies limiting algal growth and reducing the likelihood of harmful algae blooms (HABs). Biochar can be placed in floatation balls, cages, or sacks, which are then tethered along the shoreline and in critical locations throughout the waterbody, like where an inlet enters a lake.

The benefits of biochar far outweigh the relatively low-cost investment. In addition to phosphorus removal and algal growth prevention, once the biochar’s capacity to absorb phosphorus has been exhausted, it can be re-purposed as compost for soil enrichment. Princeton Hydro recently installed biochar flotation bags in various locations throughout Lake Hopatcong, including the Lake Winona outlet, the Lake Forest Yacht Club inlet, Lakeside Avenue and Holiday Avenue inlet in Hopatcong, and the Edith Decker School outlet in Mount Arlington.

The biochar bag installation, which was funded by the NJDEP Freshwater HABs Prevention & Management Grant provided to the Lake Hopatcong Commission (LHC) and its project partner the Lake Hopatcong Foundation (LHF), is one part of a multi-pronged lake management plan that aims to prevent the development of HABs and protect the overall water quality of Lake Hopatcong. Last summer, Lake Hopatcong - along with freshwater lakes throughout the country - was hit hard by a HAB outbreak that caused beach closures, health advisories, and water quality degradation.

Princeton Hyrdo has been working with the LHC, LHF, Morris & Sussex Countys, and local municipalities to implement a number of lake management strategies, including the recent dispersal of Phoslock, a different type of HAB-battling material, in Landing Cove, which was the largest application of Phoslock ever completed in the Northeast. The team also installed Floating Wetland Islands, which use a mix of microbes and native plants to remove excess algae-causing nutrients from the water, in different areas of Lake Hopatcong.

Over the coming weeks, our team is installing more biochar bags in Roxbury, NJ at Duck Pond and in Mount Arlington, NJ at Memorial Pond.