Algal Fertilizer: Enhancing American Beachgrass Growth on Dunes

Schreier, Claudia (School: Marine Academy of Technology and Environmental Science)

The presence of healthy dune grass is critical to ensure that sand dunes are stabilized and able to thrive in the harsh coastal environment. This research was conducted with the goal of developing a viable biofertilizer from Sea Lettuce, a green, sheet-like macroalgae that grows prolifically in many parts of the world. By mixing agar with harvested algae, a dry, solid fertilizer was produced; the algal supplement was compared to a commercial fertilizer that is currently used to supplement dune plants on Island Beach State Park in Seaside Park, NJ. The commercial fertilizer, synthesized from treated waste, includes traces of pharmaceuticals and heavy metals, and could potentially be harmful to marine species. 600 American Beachgrass plantings were supplemented with either the algal supplement, commercial fertilizer, or a non-fertilized control. In July and November 2018, the chlorophyll content of leaf samples, plant thickness, and overall survival rates were recorded, collected from two sites within the park. The data was utilized within an Overall Plant Health scoring system, with each parameter counting for 100 points for a possible 300 points. Based on this system, the algal supplement consistently scored higher than the commercial and control treatments, demonstrating that algae-based fertilizer can provide an environmentally friendly alternative to commercial fertilizers while also being an efficient and economically viable option.

Awards Won: