Interactions of Various Algae Species and Phosphate

Allen, William (School: Buckeye Valley High School)

Phosphates are a major pollutant in waterways, coming from fertilizer runoff. Using varying concentrations of phosphate, species of algae, and light levels, I tested the hypotheses that algae growth increases as phosphate concentrations increase until phosphates reach toxic concentrations and that algae growth and phosphate consumption increase as light level increases. Several species of algae were cultured and then placed in culture tubes for experimentation. Phosphates were applied and concentrations of algae and phosphate were measured. The algae remained in the culture tubes for two days, after which concentrations of algae and phosphate were measured again. The data for different concentrations of phosphate and different algae were tabulated and analyzed. This was repeated with a single algae species and phosphate concentration at varying light levels. All algae either showed an increase in growth or a reduction in decline as phosphate concentration increased. Two samples, Closterium and Navicula, also showed a reduction in growth after a certain concentration. Navicula's cell count increased by 59% at 3.71ppm of phosphate and reduced phosphate by 83%. The algae tested with varying light levels, Scenedesmus, increased in growth and phosphate consumption as light level increased. This experiment showed that algae growth increases as phosphate concentrations increase and then declines when these concentrations become harmful; and that algae growth and phosphate consumption increase as light increases. Navicula reduced phosphate concentrations by 80-90% at varying phosphate concentrations and may be useful for reducing concentrations in waterways.

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