Methods

• Mesocosm experiment conducted which simulated the release of P during baseflow from sediment deposited in a stream.
• Soil allowed to equilibrate with water for 72 hours before inoculated tiles added to beakers.
• Periphyton biomass (as chlorophyll-a) was determined after 7 days after tiles inoculated in IRW stream were equilibrated with soils of varying P levels in 700 mL water.

Objectives

This experiment was conducted to examine the relationship between fluvial phosphorus (P) sources and algal biomass accumulation in Ozark streams.

Background

Recent independent review stated that the U.S. EPA stressor-response approach is the most appropriate, scientifically based method for developing numeric nutrient criteria. It is necessary that algal-response characteristics be determined as a function of in-stream P sources and processing to provide the needed ‘weight-of-evidence’ data for Illinois River Watershed (IRW) streams.

Conclusions

As expected, there was a positive linear relationship between the Mehlich-3 P content of stream sediment and stream P ($R^2=0.99$) as well as biofilm chlorophyll-a ($R^2=0.75$). Future work will examine these relationships in flume experiments.