No More Nitrates! A Comparison of Materials Used to Reduce Nitrate Levels in Sand Creek

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After trying to naturally reduce nitrate levels in an aquarium, we began to wonder if there were natural ways to remove nitrate levels in streams. We collected stream water from the New Prague Wastewater Treatment outlet that flows into Sand Creek. We created thirty fabric pouches and filled them with various materials including western red cedar, MN northern white cedar, pine bark, mixed wood, carbon steel, aluminum, bronze, stainless steel, and corn cobs. We hypothesized that if we test these materials, then the Mixed Wood will remove the most nitrates due to the variety of wood in the mixture. We tested the water for nitrate levels and found it to be 20.5, which is a very high level. To measure the nitrate levels, we used a spectrophotometer and TNT 835 and 836 testing vials. Thirty pans were filled with 600 mL of stream water. We added a testing pouch and replicated each test three times. We pulled a sample out of each pan of water at 6, 12, and 18 hour intervals. Our Hypothesis was not supported, we failed to reject the null hypothesis and reject the null hypothesis at the 5% and 10% level using a one sample t-test for the Mixed Wood. MN Northern White Cedar decreased over the 18 hours and we were able to reject the null hypothesis at the 1% level for all 3 t-tests. Another material we would like to study more is corn cobs, because the results showed some change in nitrate levels.

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