**Big Roots for Big Problems**

**Build Your Own Root System!**

**Group size:** 1-2

**Materials:** Pipe cleaners, scissors, paint roller trays, soil, watering can

**Background:**

 This activity is designed to demonstrate the relationship between roots and soil erosion. Erosion is process where soil is removed from one location by water or wind and deposited somewhere else. Soil erosion can result in a wide range of problems including desertification, land degradation, loss of nutrient rich topsoil, and degradation of waterways. Plant roots hold soil together in an intertwining mass that protects against wind and water erosion. Larger, more complicated root systems are more effective at holding soil together. In this activity students will construct their own root system using pipe cleaners and test how effective their roots are at preventing soil erosion.

**Procedure:**

1. For each group distribute 1 paint roller tray (or any other container with a sloped surface) and 5 pipe cleaners
2. Attach two “anchors” to the top of the paint roller tray near the top of the sloped portion with about 3 inches of space between them. These anchors are what the students will attach their root systems to and they can be just about anything so long as they hold the root system in place (chopsticks, knitting needles, additional pipe cleaners)
3. Students must design their own root system using the pipe cleaners as roots. Students may cut up the pipe cleaners however they would like and attach their roots to the anchors
4. Once the roots are in place carefully add soil on top of the roots, filling in the space between the two anchors
5. Use the watering can to simulate rainfall on the soil. Be sure to use the same amount of water for each group (we recommend ¼ liter)
6. Compare how well the different groups managed to prevent soil erosion based on how much soil was lost from between the two anchors