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| **Schoolyard Ecology: Re-growth of grass in varying amounts of light** |

**Baltimore Ecosystem Study**

**Cary Institute of Ecosystem Studies**

**Towson University**

***Comparison of Grass Biomass in Varying Amounts of Sunlight***

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| **Source** |  | Alan Berkowitz, Bess Caplan, Sarah Haines, Tim Meyers, Trevor Shattuck. Cary Institute of Ecosystem Studies and Towson University. |
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| **Questions** |  | What are the limiting factors to the rate of photosynthesis?  How is the flux of carbon in an ecosystem affected by sunlight?  Does sunlight exposure affect grass biomass in a given area? |
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| **Overview** |  | Carbon plays a major role in the structure of life, the condition of the climate and the use of global energy. Plants use photosynthesis to construct sugars out of the carbon from CO2 in the surrounding atmosphere. The carbon in these sugars is what turns into not only an energy source for the plants, but also the biomass of the plants. Students constantly hear about the abundance of CO2 in the atmosphere and that plants are needed to remove this CO2. They rarely have a solid understanding of what happens to that carbon after the photosynthetic process.  This simple study will give students an idea of what happens to the carbon from CO2 once it is absorbed by plants. It will give students a concrete process to begin to think about the rate of photosynthesis controling the growth of plants and that the biomass of those plants is actually coming from the atmosphere, not the soil. |
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| **Materials** |  | * 3, 50 cm X 50 cm PVC pipe quadrants * 12, marking pegs * 1 pair, lawn shears or scissors * Scale |
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| **Procedure** |  | **Find a good location for the study.**  1. Select three study areas, shaded, partly-shaded, and un-shaded. Other than the amount of sun available to the plots, they should be as uniform as possible with respect to vegetation type, vegetation density, soil moisture, soil composition, etc.  2. Lay down one quadrant in each of the above areas. (Multiple replicates for each area can be used if the resources are available.)  ** Prepare the plots**  1. Using shears or scissors prune and weigh the grass sprouts inside the quadrant. (A drying oven can be used for better accuracy.)  2. Mark the 4 corners of each quadrant with pegs.  ** Collect the data.**  1. After 5 days, replace the PVC quadrants using the mark pegs as guides.  2. Prune, at about the same level as the first pruning, and weigh the new grass sprouts.  ** Analyzing data.**   1. Determine which area had the fastest increase in biomass through the course of the study. This data can be graphed. 2. Discuss what could have lead to the differences in rates of mass. |