**ECO-COLUMN LAB INVESTIGATION: *ANALYSIS***

1. Describe the specific research objective of your group’s investigation.
2. Identify the components of the experimental design:

* Independent variable
* Dependent variable
* Control
* Constants
* Hypothesis

1. Record dry mass data collected throughout the sampling period.

Eco-column area = \_\_\_\_\_\_\_\_\_ cm2 Number of seeds plated/eco-column\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| --- | --- | --- | --- |
| **Treatment** | **Starting dry mass (g)** | **Final dry mass (g)** | **Change in dry mass (g)** |
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1. Calculate the Net Primary Productivity.

Since NPP is expressed per 1 meter squared, you must convert your area in cm2 to m2. The example below shows how this would be done if the growing area were 100 cm2.



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| --- | --- |
| **Treatment** | **NPP in g / m2/week** |
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1. Create a graph to illustrate the similarities/differences in net primary productivity over the course of the experiment.
2. Assuming the amount of respiration that occurred in the control was \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, what is the Gross Primary Productivity in each treatment?

|  |  |
| --- | --- |
| **Treatment** | **GPP in g / m2/week** |
|  |  |
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1. Explain why grass clippings were taken twice during the course of the experiment.
2. Describe the effect the *Rhizobium* and clover had on the primary productivity of the grass plants. Use detail to explain your response, referencing your data to support your description.
3. Draw a sketch of the nitrogen cycle. Identify the parts of the cycle that were the focus of this experiment.
4. Explain why *Rhizobium* and clover had this effect on the primary productivity of the grass plants.
5. Identify the ecological relationship that exists between clover and *Rhizobium*.
6. Discuss the relationship between nitrogen fixation and primary productivity.
7. If a farmer is interesting in increasing his/her crop yield, how specifically might he/she use an understanding of the nitrogen cycle to produce greater crop yields?
8. Predict what might happen if:
   1. Soil in an agricultural area is used repeatedly to grow the same crop?
   2. A forest was harvested for lumber, the tree roots removed, and vegetation was not replanted?
   3. Excessive amounts of nitrate is added to farmland, *and* some runs off into nearby waterways?
   4. Decomposers and nitrogen fixing bacteria were absent from an ecosystem?
9. Identify possible sources of error that may have occurred in this experiment.
10. Propose a future experiment that might be conducted to further investigate nitrogen cycling and primary productivity.