**What Factors Affect Transpiration Rate In Plants?**

**I. Introduction**

In this investigation you will compare the rates of transpiration for several plant species under varying environmental conditions. You will investigate the effect of environmental factors (heat, light, and wind) on the transpiration rate.

**II. Procedure**

1. Start the activity by going to the following website :

<http://glencoe.mheducation.com/sites/dl/free/0078802849/383946/BL_10.html> .

2. Click “More Information” to read about transpiration rate in plants.

3. Pick a plant sprig by clicking one of the potted plants on the shelf.

4. Drag the sprig and drop it near the potometer on the table. The plant sprig will snap into the

potometer. The name of the selected plant will appear on a note near the potometer.

5. Click the clock to start the transpiration process. The clock will simulate time passing for one

hour. At the end of the hour, the amount of water transpired by the plant (in millimeters) will

be shown in the digital readout near the potometer. Open the Table and record the data.

6. Click and drag one of the three appliances (heater, fan, or lamp) from the lab bench to the

table and drop it next to the potometer.

7. Click the clock again. The selected appliance will turn on and run during the simulated hour.

At the end of the hour, the amount of water transpired by the plant under the new

experimental condition will be shown in the digital readout near the potometer. Record this

data in the Table.

8. Continue the experiment using the remaining appliances. Record your data in the Table.

9. Click and drag a sprig from one of the remaining three plants to the potometer. Or, click

“Reset” to get four new plants to test.

10. Repeat the steps above until you have collected data for each of the plants under each of the

four experimental conditions.

**III. Data**

1. Record your data in the Table below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Amount Of Water Transpired in 1-Hour (mL)** | | | | |
|  | **Normal** | **With Fan** | **With Heater** | **With Lamp** |
| **Arrowhead** |  |  |  |  |
| **Coleus** |  |  |  |  |
| **Devil’s Ivy** |  |  |  |  |
| **Dieffenbachia** |  |  |  |  |
| **English Ivy** |  |  |  |  |
| **Geranium** |  |  |  |  |
| **Rubber Plant** |  |  |  |  |
| **Weeping Fig** |  |  |  |  |
| **Zebra Plant** |  |  |  |  |

**IV. Analysis & Conclusions**

**1. Describe the process of transpiration in vascular plants.**

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**2. Describe any experimental controls used in the Investigation.**

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**3. What environmental factors that you tested increased the rate of transpiration? Was the**

**rate of transpiration increased for all plants tested?**

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**4. Did any of the environmental factors (heat, light, or wind) increase the transpiration**

**rate more than the others? Why?**

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**5. Which species of plants that you tested had the highest transpiration rates? Why do you**

**think different species of plants transpire at different rates?**

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**6. Suppose you coated the leaves of a plant with petroleum jelly. How would the plant's**

**rate of transpiration be affected?**

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**7. Of what value to a plant is the ability to lose water through transpiration?**

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