

Transpiration Worksheet

Observations and Analysis

Assigned Treatment _____

Table 1. Potometer Readings

Time (min)	0	3	6	9	12	15	18	21	24	27	30
Water Level (mL)											

Mass of all leaves (g)	
Mass of 1 cm ² of leaf (g)	
Mass per m ² of leaf (g/m ²)	
Leaf Surface Area (m ²)	

Table 2. Water Loss (mL/m²)

Time (min)	0	3	6	9	12	15	18	21	24	27	30
Water Loss per m ²											

Table 3. Class Average Cumulative Water Loss (mL/m²)

Time (minutes)										
Treatment	3	6	9	12	15	18	21	24	27	30
Room Conditions										
Gentle Breeze										
High Humidity										
Strong Light										

Questions

- For each treatment, graph the class average cumulative water loss for each treatment. *Note:* Data may need to be in scientific notation. All numbers must be reported to the same power of 10 for graphing purposes.
 - The independent variable:
 - The dependent variable:

2. Calculate the rate of water loss (in mL/min/m²) for each of the treatments. *Note:* Rate is the average amount of water loss per minute per square meter.
 - a. Room Conditions:

 - b. Gentle Breeze:

 - c. High Humidity:

 - d. Strong Light:

3. Explain why each of the treatments caused an increase or decrease in transpiration compared with the room conditions.
 - a. Gentle Breeze:

 - b. High Humidity:

 - c. Strong Light:

4. Why was it necessary to calculate the leaf surface area before calculating the water loss for each treatment?

5. Explain the role of water potential in the movement of water from soil through the plant and into the air.

6. What is the advantage of closed stomata to a plant when water is in short supply? What are the disadvantages?

7. Describe several adaptations that enable plants to reduce water loss from their leaves. Include both structural and physiological adaptations. (Use a reference book, if necessary.)