

Transpiration Rates in Different Wind Speeds

Introduction/Rationale

The purpose is to find transpiration rates with the high or low fan setting on a leaf of a plant connected with gas pressure sensor. We were interested in plant transpiration because it is a big part of agriculture which is important in Bertie County.

Research Problem

How does wind affect the rate of transpiration of a plant?

Hypothesis

I thought that the rate of transpiration would increase on both high and low wind settings.



Materials and Methods

The following are the materials that were used for our project:

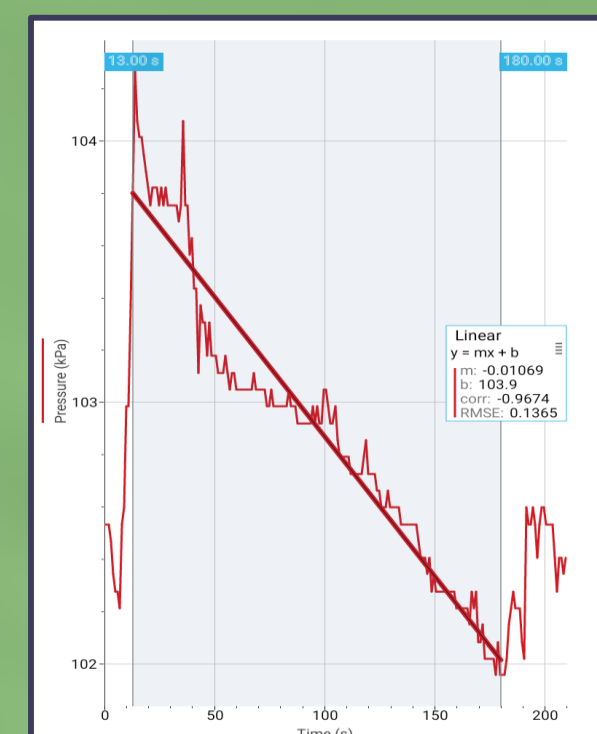
1. Gas pressure sensor
2. Dogwood leaf with stem included
3. LabQuest Stream
4. Tablet
5. Fan



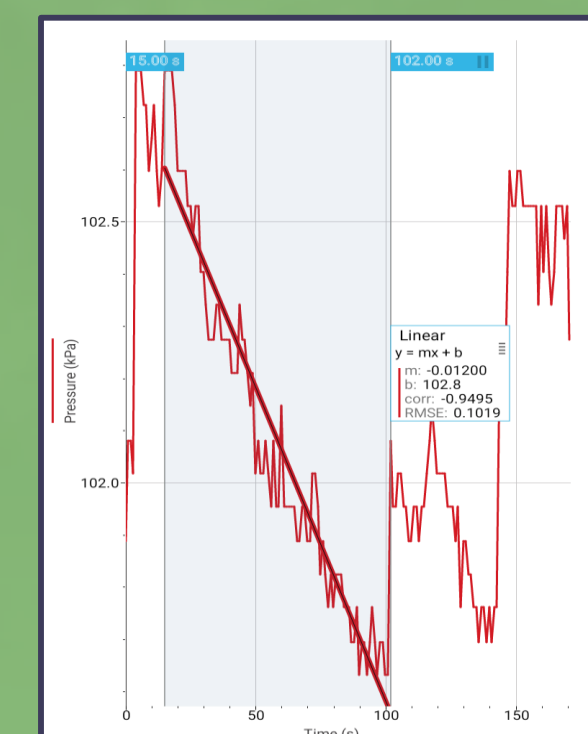
We set up the box fan with the dogwood leaf connected to the gas pressure sensor that was connected to a LabQuest Stream Bluetooth paired tablet. We ran the sensor with the fan on both low and high speeds for 3 minutes - this produced a graph with our results.

Results

Rate of Transpiration on a Dogwood Stem with variable speed fan (m=slope of line)		
	Low	High
m value Trail One	-0.0377	-0.021
m value Trail Two	-0.0373	-0.0158
m value Trail Three	-0.0107	-0.012
Average	-0.02857	-0.0488



LOW SPEED TRIAL 3



HIGH SPEED TRIAL 3

Discussion of Results

We noticed that the graphs were different between the low and the high speeds. The graphs looked similar but the slope (m) value was different. The m value of -.0488 was the average value of the slope for the high speed test meaning that this slope was steeper and the rate of transpiration was greater. If we were to revise what we did about the project we did we would use heat of light instead of wind.

Conclusion

My hypothesis ended up only half correct – the rate of transpiration increased when the fan on the plant was on high speed.

References and Acknowledgements

References

- http://www2.vernier.com/sample_labs/AWV-13-COMP-transpiration.pdf
- <https://water.usgs.gov/edu/watercycletranspiration.htm>
- http://glencoe.mheducation.com/sites/dl/free/0078802849/383946/BL_10.html

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