CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
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Project Number
J1613

Project Title
Does Greater Leaf Diameter Increase Transpiration Rate of Rose Geranium (P. graveolens)?

Abstract

Objectives/Goals
I wanted to find out if transpiration rate of rose geranium is changed by the increased diameter in leaves. I think it is interesting how plants transpire, the way this actually works is still partly a mystery to scientists. It is fascinating how water can travel up a 300 foot tree. This information could be useful to people who keep plants indoors.

Methods/Materials
Total Leaf Diameters of Cuttings Tested: Two Controls
1. 2 inch diameter (1 leaf) 1. Stem (No leaves)
2. 8 inch diameter (2 leaves) 2. Clay- covered graduate only
3. 10 inch diameter (3 leaves)
4. 12 inch diameter (4 leaves)

Stem diameter of cuttings were measured to 0.3 in. approx. Leaf diameters per cutting were totaled. The number of leaves per cutting was equal in each experiment. Narrow, 25ml. graduates were filled to 21 ml.with distilled water. The stems were recut under water and put in and sealed with clay 2 ½ inch from the base of the stem. The water level was recorded then placed in a west facing window. Each day transpiration rates, weather and temperature were checked at proper time, beginning 24 hours after they were first put in the graduates.
A total of 4 experiments were done.

Results
Average Total Transpiration After 5 Days: (Listed according to leaf diameter size in ascending order. 2 in.-12 in.)
2 in. group - 2.35 ml. 8 in. group - 5.86 ml. 10 in. group - 3.65 ml. 12 in. group - 7.78 ml. Controls: Stems had 1 ml evaporation through their xylem. Control # 2 had no water loss. This was to show water does not evaporate through clay.
12 inch leaf diameter transpired 5.43 ml. more than the stem without leaves, 6.5 ml. more than the 2 in., 4.13 ml. more than 8 inch., 1.92 ml. more than 10 in. leaf diameter.

Conclusions/Discussion
According to my experiments and research, I conclude that greater leaf diameter increases transpiration rate in rose geranium (p. graveolens). I saw that the 12 inch leaf diameter#s water level dropped more than all the other leaf diameters, having a 7.78 ml. transpiration rate. My hypothesis was right, because the greater the leaf diameter the more stomata the cutting has for transpiration to take place. Water is also

Summary Statement
This project proves that greater leaf diameter does increase transpiration rate of rose geranium (p. graveolens).

Help Received
Thanks to my sister for helping me with this project and to my Mom for typing my report.