



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

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Project Title Got Water? Testing for Hydrotropism in Certain Garden Plants	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective is to determine if hydrotropism of roots differs depending on whether plants have a fibrous or taproot system and how much water the plant uses. I predicted that species with taproots would show less hydrotropism because they are more gravitropic and that the more water a species uses the more hydrotropic it would be.</p> <p>Methods/Materials I used six species of garden plant, three with fibrous root systems and three with taproot systems. I germinated the seeds and studied the roots when they were several days old. I measured hydrotropism by the angle of the roots curve towards a hydrostimulant (wet floral oasis) from downward growth. I put the floral oasis with the germinating seeds attached to its edge over a saturated salt solution to give a gradient of water towards the hydrostimulant (experimental) or over water so there was no gradient of water (control). To measure the water lost through the leaves of the plants, I took seedlings of each species and wrapped the pots in plastic to prevent water loss. I weighed the pot and left it outside for a day and then weighed it again.</p> <p>Results All the species showed deviation of the root towards the hydrostimulant. The average angle of deviation was greater in fibrous root systems than taproot systems. There was a negative relationship between the amount of water a plant used and its hydrotropism. Plants with fibrous roots used less water than taproot plants.</p> <p>Conclusions/Discussion Based on the species I looked at, it seems that all plants are hydrotropic. I suggest this because the angle of deviation was greater for experimental than control roots. My hypothesis that fibrous root systems would show more deviation than taproots was also correct; the fibrous root species showed a greater angle of deviation. I did not expect the negative relationship between hydrotropism and water use because I thought if a plant used a lot of water it would need to search for water. A plant that uses a lot of water might occur in an environment where there is a lot of water, and not need to search for water.</p>	
Summary Statement I showed that hydrotropism is greater in species with fibrous root systems by comparison to taproot systems and also in plants that use less water.	
Help Received I discussed the techniques and experimental setup with Philippa Drennan of Loyola Marymount University.	