



**CALIFORNIA STATE SCIENCE FAIR  
2004 PROJECT SUMMARY**

<b>Name(s)</b> <b>Travis R. Meyer</b>	<b>Project Number</b> <b>J0610</b>
<b>Project Title</b> <b>Factors that Affect Soil Conductivity for Use in Measuring Water Content</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> My objective was to determine if it was reasonable to use electric conductivity as a measure of soil water content for use in watering plants.</p> <p><b>Methods/Materials</b> Eight insulated trays were set up, and laid down with two wires were spaced equally spaced apart in each. A large quantity of dirt was prepared by mixing soil to homogenize the soil. Plain dirt was put it in two sample trays, then some mixed with sand and that was put in two trays, then the same with wood chippings and with potting soil. A cup of water was added to one of each kind of soil mix. The conductivity was measured, one sample soil mixture serving as a reference for the soil type. Sampling was first conducted every half hour, then hour, and then two hours and so on they were measured. The time of measuring totaled over 180 hours.</p> <p><b>Results</b> It was found that after the water was added, the conductivity went up, and then for all of the samples but one, kept rising over a few hours. It became apparent ions were being dissolved into the water, making it easier for the electric current to travel through. The base conductivity and the change in the conductivity are dependent upon the quantity of dissolving salts, and the permeability of the soil.</p> <p><b>Conclusions/Discussion</b> In conclusion, it is possible are able to measure the water content indirectly to know when to water it. However, the soil properties differ which makes it necessary to establish a baseline by another method.</p>	
<b>Summary Statement</b> Using a soil's conductivity to find out how much water is in it.	
<b>Help Received</b> Father helped getting experimental supplies; Mother helped getting board supplies.; Specialist advised on chemistry.	