



**CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY**

Name(s) Vedant V. Janapaty	Project Number J0903
Project Title Redirecting Water to the Roots: An Effective Way to Increase Water Absorbency	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals About 31.4 million acres are irrigated with sprinkler systems. In addition, 26.2 million acres are irrigated with surface water. Surface water evaporation is a key reason for loss of water in farms. The purpose of my experiment was to investigate if delivering water directly to the roots of trees and plants is more effective than sprinkling water at the surface. I hypothesized that delivering water directly to the root is at least 2-times more effective.</p> <p>Methods/Materials Soil samples were prepared into four experimental groups. Control Group (Group 1) consists of samples of soil where 100 ml is sprinkled on the surface. Three other groups were also tested where 100 ml is poured at a depth of 10.16 cm (Group2), 50 ml is poured at a depth of 10.16 cm (Group3), and 25 ml is poured at a depth of 10.16 cm (Group4). The moisture level was measured at a depth of 10.16cm at various times over 5-days using a Vigoro moisture meter. The independent variables in my experiment were 1) location of delivering water to the plant (surface vs depth) and 2) the amount of water. The dependent variable is the moisture level at 10.16cm depth. Control variables are temperature, atmospheric humidity, wind, and soil type.</p> <p>Results Results of this experiment show that at least 4-times less water can be delivered to the root to maintain the same moisture level as water delivered at the surface. Repeatable results were obtained over six trials.</p> <p>Conclusions/Discussion When water is sprinkled at the surface, surface water evaporation reduces the available moisture to the roots. When water is delivered deeper under the surface, water loss due to surface evaporation is reduced and moisture levels are maintained for a longer time. Evaporation of surface water depends on temperature, atmospheric humidity, wind, and soil type. The benefits of delivering water to the root may vary in different climatic conditions. This experiment should be repeated under different climatic conditions including high/low temperatures, high/low wind velocity, and high/low humidity to study how the benefits of this method vary.</p>	
Summary Statement My project is about finding a more efficient way to deliver water to plants and trees and thus saving precious water	
Help Received My science teacher helped me understand the scientific method	