



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

Name(s) Hannah J. Washburn	Project Number S0808
Project Title Rehabilitating Hydrophobic Soil to Allow Indigenous Bunch Grass Growth	
Objectives/Goals The purpose of my project is to determine if treating hydrophobic soil with an alkaline solution or an Aqua Gro L solution will speed the soil rehabilitation process and help allow native bunch grass growth. It is my goal to help the soil get back to its non-hydrophobic state.	
Abstract	
Methods/Materials I collected coarse, upland soil and covered it with dried leaves and wood. With supervision, I burned the organic material for 8 hours and let it cool. I then did a WDPT test to determine hydrophobicity. I had 4 test soils: untreated soil, hydrophobic soil, hydrophobic soil treated with an alkaline solution, and hydrophobic soil treated with an Aqua Gro L solution. I saturated 12 cups hydrophobic soil with the alkaline solution and allowed it to dry. I saturated another 12 cups with the Aqua Gro L solution. In bottom of 8x11 aluminum pan I spread 1 inch healthy soil, covered this with 1 inch layer of test soil, followed by 1 inch healthy soil, spread grass seed, covered with 1/4 inch top soil, watered, watched and documented growth. After 2 weeks I pulled 10 plugs from each test tray, rinsed soil away from root system, weighed and measured grass/root plugs. Total of 4 growing trays and 40 grass/root plugs.	
Results Untreated soil grass/root plugs had an average weight of 8.1 grams after soil rinse and an average root ball length of 7.8 cm. Hydrophobic soil grass/root plugs had an average weight of 6 grams after soil rinse and an average root ball length of 4.8 cm. Hydrophobic soil with alkaline solution grass/root plugs had an average weight of 1.05 grams after soil rinse and an average root ball length of 1.5 cm. Hydrophobic soil with Aqua Gro L solution grass/root plugs had an average weight of 10.2 grams after soil rinse and an average root ball length of 8.8 cm.	
Conclusions/Discussion As a hydrophobic soil rehabilitator, Aqua Gro L has the most potential to allow water percolation and promote plant growth with a strong, penetrating root system. This could be a possible solution to the problem of erosion and mud slides of denuded hillsides due to fire. While the occasional fire is considered to be healthy for an ecosystem, hydrophobic soil is not. It can paralyze an ecosystem and be financially devastating due to loss of top soil from excessive erosion and mudslides.	
Summary Statement Finding a way to rehabilitate hydrophobic soil to promote plant growth with a strong penetrating root system is necessary for both a healthy ecosystem and the prevention of financial devastation due to top soil erosion and mudslides.	
Help Received My mother took photographs of my testing process	