



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

Name(s) Brandon B. Dutcher	Project Number J1006
Project Title Bananas to Biofuel: Meeting the Energy Needs of Africa	
Abstract Objectives/Goals My main objective was to determine if banana briquettes are a viable fuel source for firewood in places that have a lot of banana peels, but little firewood (Africa is the prime example). A related objective is to determine whether the briquettes burn better than wood or not. Another secondary goal is to determine which ratio of banana peel to sawdust burns the best. Methods/Materials I used around 20 lbs of banana peels, and approximately 5 lbs of sawdust. I then ground up the banana peels and mixed them with sawdust in varying proportions (100% banana 0% sawdust to 70% banana 30% sawdust in 10% increments) then pressed them in a briquette press and dried them out in an oven for about 15 hours. After that, I burned the briquettes under a pot of water for 10 minute increments, all the while recording the temperature of said pot of water with a probe connected to my computer. Results After 10 minutes of burning, the pot of water reached a normalized temperature of: 27 degrees for 100%banana; 48 for 90%banana; 50 for 80%banana; 52 for 70%banana; 52 for poplar; 63 for red oak; and 44 for white pine. Conclusions/Discussion I have determined that the optimal briquette is that of 70% banana and 30% sawdust, and said briquette burns better than white pine, the same as poplar, but less efficiently than red oak. Also I determined that these briquettes can definitely be used as a fuel source in Africa.	
Summary Statement My project is testing the plausibility of taking banana peels and turning them into solid biofuel for use in places like Africa.	
Help Received Father helped design briquette press and burn briquettes; Mother helped put project board together.	