



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Oliver Glenn V. Hernaez	Project Number S1608
Project Title Determination of Cyanide Content in Philippine Cassava	
Abstract Objectives/Goals Cassava is a staple crop in many third world countries that is an edible but poisonous plant. It produces a cyanogenic glucoside called linamarin, which is hydrolyzed by the linamarase enzyme. The question being answered was: "Is the hydrogen cyanide content of the Philippine cassava root, sap, leaf, and flour samples, over the toxic level of thirty ppm?" Methods/Materials Using the picrate test method, cyanide levels of the cassava root, leaf, sap, and flour were determined. Linamarase enzyme was used to enhance linamarin hydrolysis. Picrate paper and phosphate buffer paper with pH of 6.0 were prepared with the use of filter paper. In conducting the experiment, phosphate buffer paper was placed in a film canister and 0.1 mL of linamarase was added. a sample was added followed by 0.5 mL of water. After that, a picrate paper was inserted before the container was sealed and set at room temperature overnight. A color chart was used to determine the cyanide level in ppm. Ten samples of each kind, roots, leaves, sap, and flour, were tested. Results Sample averages were 23.5 ppm for the roots, 15.5 ppm for the leaves, 8.0 ppm for the sap, and 7.0 ppm for the flour. A person must eat at least 1.28 kg. of roots, 1.94 kg of leaves, 3.75 kg of sap, and 4.29 kg of flour to reach the danger level for being prone to intoxication of cyanide. Conclusions/Discussion These were below the suggested danger level of 30 ppm. Testing the total cyanogenic glucosides through varieties of cassava samples would conclude which type of species of cassava have higher levels of cyanide. The picrate test method is essential in determining cyanogenic levels in cassava plants to ensure safety of populations consuming cassava crops.	
Summary Statement This project is about the amount of cyanide poison in the cassava plant because it helps people, especially in third world countries, be aware of its danger and ensures their safety.	
Help Received Conducted parts of the experiment at Don Mariano Marcus Memorial State University in La Union, Philippines under supervision of Dr. Leonora Ngilangil; Victoria Acquistapace helped with guidance through the application process	