



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

Name(s) Scott R. Wilson	Project Number S0821
Project Title Hydroponics and Aquaculture: Using Plants to Recycle Fish Ammonia	
Abstract Objectives/Goals Study if hydroponically grown plants (plants grwn in liquid media) can help recycle ammonia generated in fish-farming (aquaculture) operations. Methods/Materials The experimenter recycled ammonia generated by goldfish in a test aquarium and measured the amount of ammonia removed by hydroponically growing mint plants in the water and ammonia from the test aquarium. The experimenter compared the growth of mint plants fertilized with fish ammonia to the growth over the same time period of a control plant not provided the fish ammonia. Results Test plants removed ammonia from the test tank to safe levels for the fish. The fish ammonia and water from the test aquarium promoted growth of the test plants over the growth of the control plant. Conclusions/Discussion This study indicates plants such as mint plants grown hydroponically can benefit from the ammonia/water mixture produced by fish such as goldfish. More generally, aquaculture (raising fish such as goldfish) can produce ammonia by-products removable and usable by hydroponically grown plants (such as mint).	
Summary Statement Determine if hydroponically grown plants (plants grown in liquid media) can help recycle ammonia generated in fish-farming (aquaculture) operations	
Help Received Parents helped with typing and helped purchase supplies.	