



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

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Project Title Miracle or Menace? Water Purification using Plant Potential	
Abstract Objectives/Goals The objective of this experiment was to determine the contribution of water hyacinths in nutrient purification and to find the rate at which they reduced ammonium hydroxide (NH ₄ OH) levels in water. Methods/Materials Three control groups and one experimental group were used. Each group consisted of a certain combination of hyacinths, water, and aqua ammonia. NH ₄ OH concentrations in the range 80-100 ppm were used in all trials. The reduction in NH ₄ OH levels was measured daily by titrating using 0.008N sulfuric acid and a pH indicator. Results On average, NH ₄ OH levels decreased rapidly in the experimental group during the three trials, implying that water hyacinths do reduce NH ₄ OH levels, by about 5-15%, and the remaining 25% could be attributed to evaporation. These reductions occurred only during the first few days, after which both groups settled down to a constant level. Conclusions/Discussion The results indicate that irrespective of the initial concentration, an equilibrium point is reached after 3-5 days. It can be concluded that water hyacinths do affect purification, but evaporation and other chemical reactions seem to contribute more to nutrient reduction. This purification technique was also verified during spring to avoid plant dormancy. In future experiments, a more controlled environment is recommended to minimize evaporation and temperature affects.	
Summary Statement The experiment tested the ability of water hyacinths to reduce overall ammonium hydroxide concentrations in a contaminated synthetic model of a water body.	
Help Received Father assisted during set up and experimentation; Dr. Chat Mohan and Dr. Ram Krishnamurthy explained chemical concepts; Received guidance from teachers, Mrs. Gross and Mrs. Gillum	