



**CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY**

Name(s) Maya Y. Jaffe	Project Number 35908
Project Title The Addition of Lysine to Strawberry Plants and the Effect on Drought Resistance	
Objectives/Goals The purpose of this experimental research is to determine whether adding lysine to strawberry plants will increase drought tolerance. Abstract Methods/Materials Materials used for this project: 12 strawberry plants, soil, 12 pots, saucers, lysine tablets, a growing light, oxygen monitor, pH meter, and a ruler. Plants were watered Monday and Thursday with and without lysine. Every Sunday, plant measurements were taken including: plant height, number of fruits, number of leaves, number of dead leaves, number of stems, other qualitative observations, and pictures were taken. Oxygen monitors were used to measure the output of oxygen, but differentiation was not detected. Soil pH was measured, but the pH of the water altered the results. Results The most notable results were the plants that were watered the same amount as the control plants but had 1000 milligrams (mg) of lysine thrived. Average plant growth for plants watered with six ounces and 1000 mg was 1.25 centimeters, and average leaf growth of 18 leaves. Average stem growths for these plants were 5.5 stems and average dead leaves over the five weeks were 1.5 leaves. These plants thrived and were close to bearing fruit. Plants watered with 2000 mg of lysine did not thrive, by week 5 the plants died. Plants watered with 1000 mg and less water thrived for three weeks and began to die. Results of this experiment were inconclusive. Conclusions/Discussion Addition of lysine, a hydrophilic essential amino acid, to strawberry plants did not definitively demonstrate increase drought resistance but plants that were watered properly with 1000 mg of lysine thrived and were at the point of bearing fruit. A possible theory for why these plants thrived is due to the fact that strawberries are more alkaline and lysine is alkaline. Adding additional water served to dilute the alkalinity of the plant. Additionally, the plants that are watered less but had no lysine added thrived. This brings up many questions as to how the lysine was affecting certain plants and interacting with the water, indicating that the plants watered with 6 ounces and 1000 mg tolerate lysine. Conversely, increased lysine appears to be toxic. Possibly, lysine is keeping the moisture in the soil. Further areas for investigation would be to examine drought resistance with: 1) a reduced amount of lysine, 2) different amino acids, 3) more acidic amino acids, or 4) different plants.	
Summary Statement Lysine was added to strawberry plants to discover the possibility of creating drought resistant crops.	
Help Received	