Effects of L-Glutamine on the Root Growth of Soybeans

Zenker, Paige (School: Flasher High School)

I chose this project because I am interested in the effects of certain treatments on plants, specifically soybean roots. This experiment is mainly to provide insight into how glutamine affects soybean growth. The overall objective of this experiment is to determine the relationship between soybean roots and glutamine. To start this experiment I inoculated 100 soybean seeds with the same amount of Bradyrhizobium japonicum. Then planted 20 seeds into 5 separate containers, and started watering them with the same amount of a mixture of inoculate and water. I increased the amount of solution each group was getting once the seeds germinated. Two weeks after plant growth I started treating each soybean group with different amounts of the glutamine treatment (5mL, 10mL, 15mL, 20mL). The glutamine treatments continued for three weeks to ensure valid results. Then I used an analytical scale to measure the root mass in ounces, and length in inches of the soybean plants. The result of this experiment was that glutamine has the most positive effect on soybean roots when received in smaller amounts. I measured the individual mass and average mass of each group, as well as the individual length and average length of each group. The group that received 5 mL of treatment had the highest individual and average mass and length at the end of this project. Overall this experiment provided insight into how glutamine treatments are helpful and harmful to soybean roots. Most importantly soybeans reach a threshold when too much glutamine is supplied to soybeans.

Awards Won: