



**CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY**

Name(s) Zachary Patton	Project Number J1919
Project Title The Effect of Soaking Seeds on the Growth of Hordeum vulgare L. in a Fodder System	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The goal of this project is to find out if presoaking Hordeum vulgare L. (barley seed) affects its total growth after an eight-day cycle using a fodder system. I wondered if there was an optimal soak time to produce the greatest yield. The hypothesis was if Hordeum vulgare L. was soaked for 90 minutes, then the seeds would produce the greatest yield after eight days.</p> <p>Methods/Materials I constructed a hydroponic fodder system using plastic PVC pipe, grow trays, a water pump, and a timer. The project tested soak times of barley seed for 45 minutes, 90 minutes, and 180 minutes in an eight-tray hydroponic indoor rack. The eight trays were rotate down the rack daily placing the new seed tray at the top. The seeds were automatically watered 3 times a day for 5 minutes by a pump system controlled by an automatic timer. Each growth cycle consisted of 8 days of growth. The control group is at 0 minutes soak time, which is also measured every eight days as an end point. The independent variable is the soak time; the dependent variable is the amount of seeds and amount of water soaked.</p> <p>Results The system yielded on average 10 lbs. of fodder for every 2 lbs. of seeds. The average weight for 45 minutes soak time was 10.25 lbs.; 90 minutes soak time was 10.78 lbs.; 180 minutes soak time was 10.90 lbs.; 0 minutes soak time was 10.60 lbs. The two pounds of grain produced about ten pounds of fodder, which is a 1:5 ratio. This means that the fodder system could grow 5 pounds of fodder for each pound of seed.</p> <p>Conclusions/Discussion After completing my project, I found that my hypothesis was not supported because there was not a significant difference between each of the four soak times, about .30 lb. This calculates to roughly about one more bite. A healthy cow needs to eat about 2.5% of its body weight. The average cow weighs roughly 1000 pounds which would calculate to about 25 pounds of feed each day. Although there was not a big difference in the yield, the system successfully grew fodder without mold that was readily eaten as supplemental food by my livestock.</p>	
Summary Statement The purpose of this investigation was to find if there is an ideal length of time to pre-soak fodder seeds to achieve the most yield in weight using a hydroponic system.	
Help Received I conducted the project myself.	