A New Spin on Botany: The Effect of Gravitational Resistance during Germination on Plant Growth

Bennett, Jacob (School: Woods Cross High School)

This project was conducted to investigate effects of simulated gravitational force applied to germinating plants through circular acceleration. It was hypothesized that increased acceleration would result in greater growth. Plants were spun during germination for the first week of testing and grew without spinning the second week. Plant height was recorded after each week to show the change that resulted because of the increase in acceleration. After the first week, both tests that were spun to simulate a gravity increase had less growth than the control test. After the second week however, the test in the simulated weaker gravity grew better than the control, while the test that simulated the stronger gravity of the two still showed less growth than the control. The data supported the hypothesis to an extent. Increased acceleration applied to growing plants by spinning showed that simulated gravity slightly stronger than Earth's produced increased growth. Meanwhile, accelerating the plants by a greater amount resulted in less growth than if no other force was applied. Further experimentation is currently being conducted to assess the optimal simulated gravitational resistance for growth and its effect on stem thickness as well as height. Applications with knowledge gained from the results of this project include introducing this method to the agricultural field. Farmers could spin plants during germination at an acceleration to simulate gravity slightly stronger than Earth's to result in a stronger plant, greater growth, and an expected increase in crop yield.

Awards Won:

NASA: Honorable Mention