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Vertiginous Vegetables: A Study of How Gravity Affects Root Development

My project studied how changing gravitational direction affected root development. I chose this project because I wanted to see if I could change the direction of root growth by overriding natural gravitational pull. I hypothesized that if plants germinated on a spinning record player, their roots would grow in an outward angle rather than downward because of the change in gravitational pull caused by centrifugal force. If the process worked, similar methods could be used to stabilize plant development in space, because plants grown in zero gravity do not develop normally. My procedure included suspending seeds in loose cotton, placing them in cups, and mounting them on spinning record players(I did my test this way because during my research, I found no tests allowing for downward root development, which makes existing tests biased against natural root growth). In my experiment, I placed a set of different types of seeds on two spinning record players and kept a set of each type as controls. I watered and monitored the seeds, keeping the experimental seeds spinning constantly, until roots developed in both sets. After a couple of weeks, I collected my data and recorded the results: the seeds that germinated on the record players responded to the centrifugal force and had outward-growing roots, but the control seeds, which were exposed to natural gravity, developed downward-growing roots. In conclusion, I proved my hypothesis was correct. I redirected the seeds' normal root development by changing the direction of the gravitational forces affecting them.