Evaluating the Potential of Micro Algae as an Inoculant for Pulses: Ideal Conditions for Indoor Farming, Year Four of an Ongoing Project

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I tested microalgae as an inoculant for indoor farming. I prepared three controlled environment growth boxes; for each of the three test groups: Spirulina / Blue-green algae / water; germinated 100 seeds, planted them in the growth boxes; recorded days until first cotyledon; monitored temperature and soil moisture; watered every 3-4 days, dependant on moisture readings; added microalgae powder every 14 days to the appropriate growth boxes; Plants matured for 60 days. After removing each plant from the soil; measured plant height; counted the leaves; weighed plants and roots to demonstrate wet weights; then dried out to determine the dry weights. This data was analysed; firstly, calculating the descriptive statistics for each group of data; F tests and T tests were conducted. To better display my results, graphs were produced. The results support my hypothesis, showing both Spirulina and blue-green algae worked as an inoculant, however Blue-Green algae far out performed both Spirulina and water. The rationale for my scientific research is that it can help society through the American agricultural food system. With increased indoor farming, farming communities could be more evenly spread out, allowing for more local farms throughout the United States, we may even have the capacity to eradicate food deserts in the USA. This could help to prevent childhood obesity and obesity related illnesses. The current nutrient pollution concerns caused by excessive phosphorous and nitrogen in our air and water could be erased because microalgae use dinitrogen thus decreasing nutrient pollution in the soil.

Awards Won: