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Is the Grass Greener?

I designed and built a system to test the effect of environmental conditions on plant growth rates. Using this system, scientists can understand how pollutants or other variables effects plant development. I used surplus materials to build the system, which consists of two enclosed, ventilated chambers containing lights, thermocouples and a growth scale. I used Triticum aestivum or common wheat grass as a model plant.

Using this system I determined the effect of two environmental variables on the growth rate of Triticum aestivum: carbon dioxide pulses, and extended daylight. I used three factors to determine differences in growth: final weight, height at different times, and appearance.

To test pulses of carbon dioxide, I delivered about 20 grams of carbon dioxide, twice daily to one of two chambers. Plants in the other chamber grew under a normal atmosphere. Plants exposed to carbon dioxide pulses showed a slight (~2%) increase in growth rate and final height.

To test extended daylight, I had one chamber exposed to 24-hours of light and the other on a 12-hour day/night cycle. The plants in the chamber with a 12-hour day/night cycle had a significant (~12.5%) increase in final height.