Blinded by the Light

Research Question

Which is better for plant growth? Artificial light, or sunlight?

Data Analysis and Results

Date	Artificial Light	Sunlight
10.1.25	Germinated	Germinated
10.10.25	Germinating	Sprouted
10.14.25	Sprouted	Planted
10.17.25	Planted	+2.5 inches in height
10.21.25	+3.5 inches in height	begins browning
10.28.25	+2.7 inches in height	-1 inches in height
11.4.25	+4.1 inches in height	-0.5 inches in height
11.11.25	+3.7 inches in height	Died
11.18.25	16.7 inches in height	Remains dead

Methodology

- Grow two lima bean plants
  - One under natural sunlight
  - One under artificial light
- Measure the growth of each plant and compare data

Conclusion

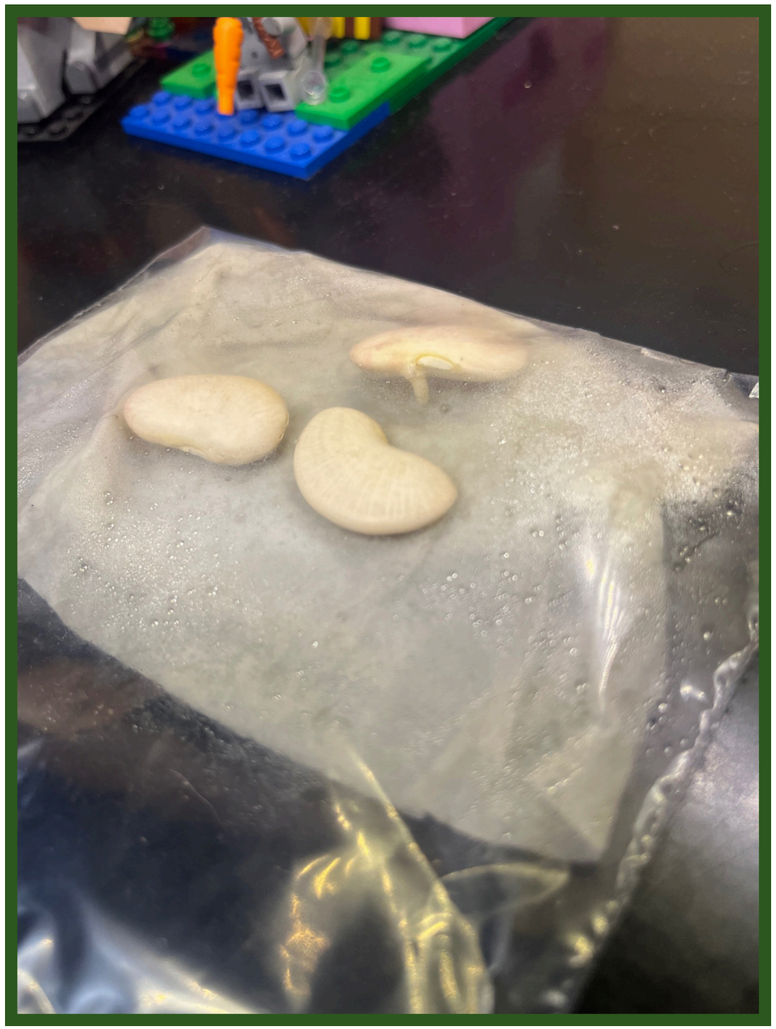
Based off of the results of our experiment, the artificial light performed better when growing the lima bean plant.

Background Research

From our research, we learned that both artificial light and sunlight provide optimal nutrients for plants to grow. We also learned that trying to use artificial light over sunlight can cause many problems. Despite these problems, a grow light lets you produce strictly red and blue light, which can affect how fast a plant grows. Sunlight has its problems too, by not being as available as some people might need it to be. Because both light sources have their pros and cons, we want to see which one would perform better when trying to grow plants. The article, ‘Light It Up,’ states that artificial light can show more consistency and order than sunlight, leading to more constant growth. By testing this, it could help the farming industry by possibly revealing that it might be better to switch to indoor farms and avoid weather complications.

Hypothesis

If two plants were grown, one with artificial light and one with sunlight, then the artificial light would perform better.



Germination of our lima bean plant grown by artificial light

Materials Used

- Lima bean seeds
- Grow light
- Water
- Paper towels
- Ziploc bags
- Soil
- Pots

Procedures

1. Begin germinating the lima bean seeds by using the Ziploc bag and filling it with a damp paper towel and seeds. Put your bag under your designated light source.
2. Once your seed starts sprouting, move it into an optimally sized cup and water it regularly
3. As your plant grows, measure its growth in inches over time. Making sure to water it periodically about three times a week

Our lima bean plant grown by artificial light sprouting

Variables

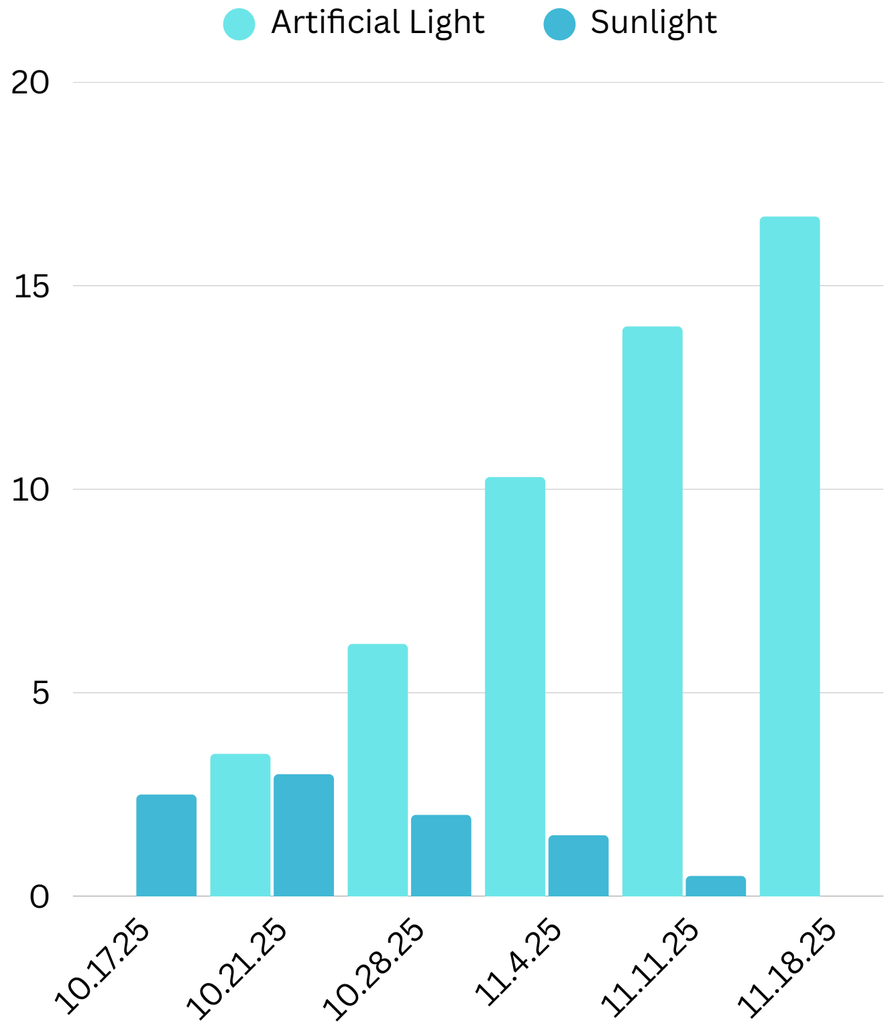
Independent: Light sources

Dependent: The growth of each plant

Controlled: Water intake, type of plant being grown, and amount of time given to grow

Our lima bean plant grown by artificial light fully grown

Data Results and Analysis



By the end of our experiment, we found that artificial light did much better than natural sunlight. Our sunlight-grown specimen may not have made it, but our artificially-grown specimen did so with flying colors. Our artificially-grown plant grew to be roughly 14 inches in height in the span of about a month and a half. This supports our original hypothesis by proving that artificial lighting can provide the nutrients plants need to grow while reducing the damage of natural factors such as harsh weather.

Discussion and Interperetation

By the end of this experiment, we discovered that artificial light is better for growing plants, especially in the town of Yuma. The weather here can get very intense which can make it hard to grow plants outside. Having an indoor alternative would make environmental issues avoidable and overall making farming a bit easier.

Our experiment could be the beginning of a new agricultural era. Agriculture, being a very big part of our community, is a very unforgiving and difficult field that requires lots and lots of work and knowledge. For example, in Yuma, our main crop is lettuce, which is grown in the winter. Given how hot it is in yuma, it is important that we learn what grows our plants the quickest, so we can reduce our time in the fields, bbecause extended time in the fields can be very harmful to our field workers.

Discussion and Interperetation

If we were to ever do this experiment ever again I would first regulate the amount of sunlight that the sunlight grown plant would get, as it appears that this was a key factor on whether it would’ve lived or died. We also regulated and measured how much water we gave the beans in order to collect more data for our project. One mistake we can think of, is when germinating our sunlight orientated bean, we left it in the bag for too long and it began browning. This ultimately led to its death. We can avoid this by measuring the exact amount of time that we need to leave the beans in he bag, in order for it to properly germinate and grow to its best extent.

Bibliography

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