The Effect of Upper Atmosphere Conditions on Pea Plant Sprouts

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Plants can be complicated to grow. Any number of issues can occur when trying to get the plants first to sprout, and then to continue growing. Worse still, seeds can “expire” or simply fail to sprout for whatever reason. Thus, it makes more sense to send plants that have already sprouted out to space to help establish a steady food source for space exploration. The goal of this particular experiment is to determine the effects of dropping pressures and temperatures on the growth of pea plants, to see what parameters may grant more success in the continued growth of plants following such shocks.

Methodology

2. Plant second round of seeds; Record growth every other day following sprouting. Used Super Snappy Variety.
3. Plant a third round of seeds; Try new watering tactic to see changes in growth. Used Early Perfection Variety.
4. Plant final group of seeds; Use these as preliminary experiments with cold and pressure. Also Early Perfection.
5. Send peas into the Upper Atmosphere.
6. Track growth of all peas for three more weeks.

Materials

- Planter
- Peas
  - Early Perfection Variety
  - Super Snappy Variety
- Soil
- Ceramic Insulation
- Space Foam
- Foam Board
- Arduino Nano
- 2 BME280 IC2 Sensors
- 2 Small Batteries
- Resistors
- Plastic bags and/or Saran wrap

Results

Due to unforeseen circumstances, only steps 1-4 were completed. All data is focused on normal growth of plants.

- Average Sprouting Time for Super Snappy: 7.8 Days
- Average Sprouting Time for Early Perfection: 7.5 Days

Growth Rate of Super Snappy Seeds:

Growth Rate of Early Perfection Seeds:

Conclusion

The peas sprout in roughly the same period of time; Early Perfection sprouts all at the same time, Super Snappy sprouting patterns vary for five to ten days for observable. Using a water sink moderately works well. Adding too much water results in fungus and longer sprouting.

Early Perfection peas can grow indoors with U.V. lights and can survive for up to three days without water.