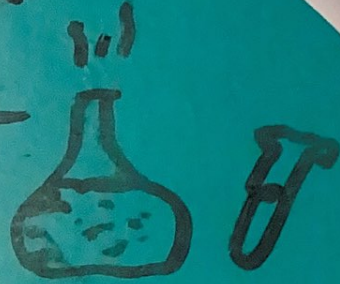


**Hilroy STAPLES®**

Science fair

Simon Wagner



Gay

Finals!



try to stop world heater

**80** Pages  
26.6 cm x 20.3 cm

**1 SUBJECT NOTEBOOK**  
**CAHIER 1 SUJET**

ASSEMBLED IN CANADA WITH IMPORTED MATERIALS  
ASSEMBLÉ AU CANADA AVEC DES MATIÈRES IMPORTÉES

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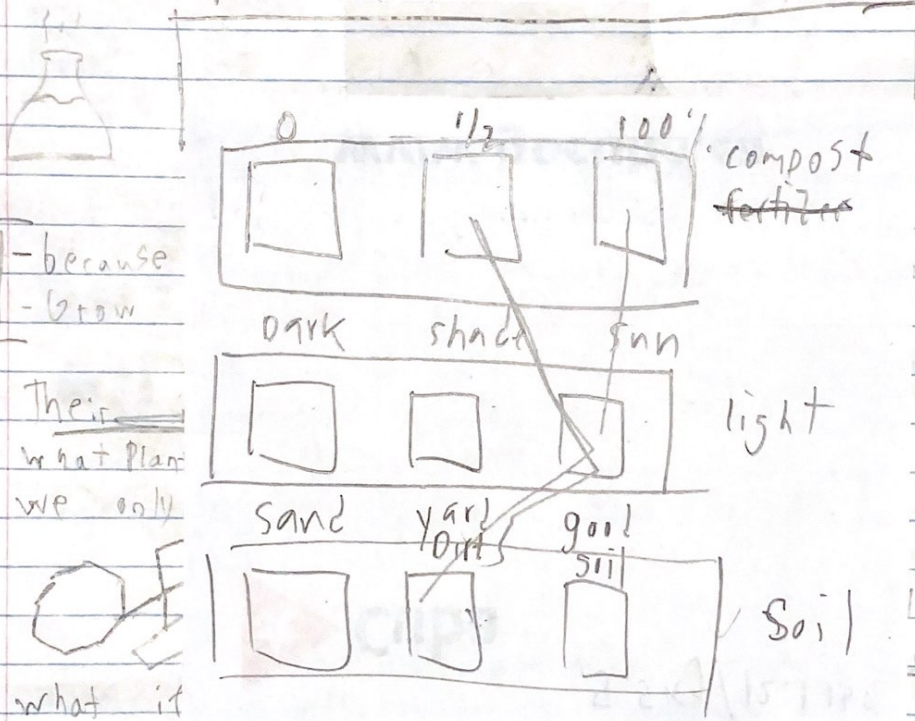
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# Day 1 of science fair ~~Nov~~ Dec 6<sup>th</sup> 2023

## Brainstorming

- I want to
- 1- make food grow faster <sup>peas</sup> than or hunger
- 2- in Canada, ~~potato~~ <sup>peas</sup> 

question one, how fast do <sup>peas</sup> potatoes grow?



- because
- grow

- Their
- what plant
- we only



- what if

- what type of soil do ~~potatoes~~ peas grow best in?

- what's in fertilizer
- nutrients help plants grow, what are nutrients
- anything that was alive? <sup>decaying</sup> stuff

## What will I need

- potato seeds - ~~sun~~ - fertilizer - controlled environment
- 3 plant pots - water - plant food <sup>1</sup> plant light

Day 2 of Science fair Dec 7<sup>th</sup>

Day 3 Dec 8<sup>th</sup>

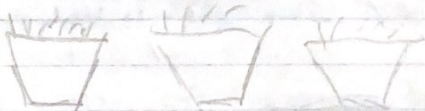
2023

## Research

- potatoes too long use cress
- cress is ready within 7 days
- will be there
- light water ~~temperature~~ compost plant food  
helps plant grow
- + cress grows, very moist rich soil  
fertile, humus, lots of nutrients
- full sun or partial shade
- add Nitrogen, Phosphorus and Potassium

## Plan

Dark Shed 100%



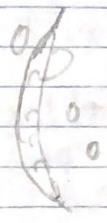
- test each thing that  
helps plant grow then  
combine the best ones  
make ultra food



Dec 7<sup>th</sup>  
2023

# Day 4 Dec 12<sup>th</sup> 2023 Soil

we set up experiment  
we set up grow lamp



- first I'm testing the light
- 2 plants in one cup
- I'm doing shade test and full light
- next I'll do potting soil sand and garden
- then I'll do different compost and coverings.

peas

109g of soil

1cm of water for each  
measuring out Dec 12<sup>th</sup>

AGRICULTURE

www.projectagriculture.ca

- growing Peas in room temp

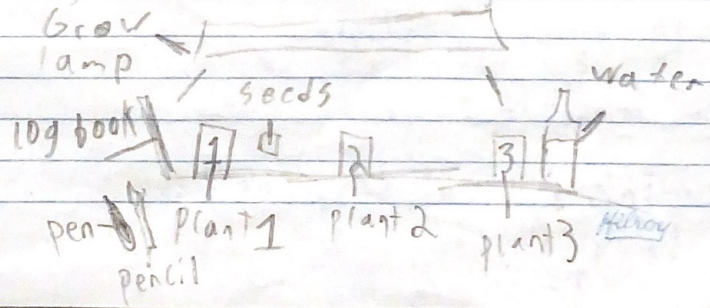
- placed in party cup with 'Coat green' potting soil.

- planted on Dec 12<sup>th</sup> 2023.

the whole experiment should take 4-5 1/2 weeks.

- Day 4 is going well although we can't find a timer

- I've got 3 plants arranged like this.



Day 5 Dec 13<sup>th</sup> 2023

- each plant gets 1d hours of light

- Plant 1 = 100% of light

- plant 2 = gets shade (translucent)

- plant 3 = gets no light (opaque)

each plant gets 15ml of tap water a day

7:30 AM - 7:30 PM

**- I think plant 1 is the best**

- plants

Observations

- plants not sprouting

- grow light heats up

going

So far everything's good

- although people say try projects over done.

Day 6 Dec 14<sup>th</sup> 2023

- Plant one the seed paped up a little

- nothing else changed

- 15ml of water using nothing else

- 1 = 100% light 2 = shade 3 = Dark

23

f light

at)

day

**Plant  
best**

is over

14<sup>th</sup> 2023

le

Day 7

Dec 15<sup>th</sup> 2023

- It looks like Plant 1 and Plant 3 have same roots
- the seeds 1, 3 are made up
- Same conditions
- going well

Day 8

Dec 16<sup>th</sup> 2023  
16<sup>th</sup>

- Plant 1 and Plant 3 sprouted
- not watered because wet still. function
- why didn't Plant 2 sprout?
- Plant 3, 2 ~~seed~~ <sup>seed</sup> visible one sprout
- Plant 1, 1 seed visible one sprout

Day 9

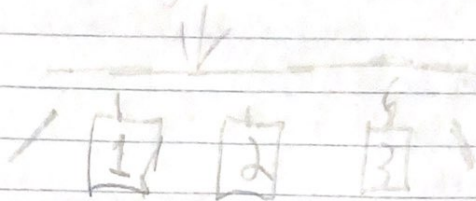
Dec 17<sup>th</sup> 2023  
17<sup>th</sup>

- plant 3 is so far the tallest
- plant 2 is shortest
- plant 1 is in the middle
- why isn't plant 1 the tallest? <sup>filter?</sup>
- maybe you need light?

Day 10

Dec 22<sup>nd</sup>  
18/10

- Plant 2 sprouted - Plant 1 is shortest
- Plant 3 is 5 days - Plant 1 is tallest



Day 11

Dec 24<sup>th</sup>  
19/10

- plant one is more dry
- plant two is mid
- plant three is damp/wet
- took a picture

1 = 1 and a half cm

= one ~~to~~ plant sprouted

2 = 1 cm and 6 mm  
~~1 cm and 6 mm~~

= one ~~to~~ plant sprouted

3 = 4 cm 2 mm

= 2 ~~to~~ plant sprouted

wonder 'why'?

18th

Day 12 Dec 20th

at d shortest

at 1 mid

- Plant 2 has 2 plants

- Plant 3 is yellowish

1  
1 = 2cm

- watered

2

2 = 2cm and 3cm

3

3 = 1cm

Dec 20th  
19th

Day 13 Dec 21st

- not watered

- going well

- Plant one is greenest

Day 14 Dec 22nd

- watered

- going well

Plant  
tea

Plant

Plant

17

Hilary



Day 15 Dec 23<sup>rd</sup>

- took out my plant
- measured them

Plant 1,1  
||

- 6cm underneath
- 4 and a half on top
- 11cm in all

Plant 1,2  
||

- 6cm underneath
- 3cm on top
- 9cm in all

Plant 2,1

- 4cm underneath
- 6cm on top
- 11cm in all

Plant 2,2

- 12cm underneath
- 5cm on top
- 15cm 6mm

Conclusion  
Plant 1,1 is healthy ist very green and thick roots

Plant 3,1

- 15cm underneath
- 14cm 3mm on top
- 29cm

Plant 3,2

- 12cm underneath
- 8cm 7mm on top
- 20cm in all

- looks like  
plant 1 is healthy ist  
thick is thick roots  
spread out  
green

plant 3 2 is least  
healthy almost  
no roots and yellow  
ish

1 Jan

Now J

- grow

p1 v

p2 v

Grow

p3 v

2 p  
seeds  
cap

grow

100

grow

600

Project 1 Experiment 2  
Jan 9<sup>th</sup> 2024 Day 1

Now I'm testing soil

- grow for 11 days

P1 will have potting soil.

P2 will have premium soil: Löss  
growing media / charged carbon.

P3 will have half and half

2 pea each  
seeds in ~~one~~ potting soil  
cup

↙  
charged  
carbon

growing them in full light  
100% light because 100% light  
grew best last experiment.

Goal find out which grows best  
~~make ultra feed~~

Jan 10<sup>th</sup> 2024

Days of second experiment

planted the Peas

10g grams of soil

P1 = potting soil

Plants growing in full light ✓

P2 = charged carbon

Planted Jan 10<sup>th</sup>

P3 = ps half  
cc half

I think  
plant 3's the best.

watered 15ml of water

everything going well ✓

---

- plant 2 looks more dry Jan 11<sup>th</sup>

plant 3 looks the best

- not sprouted

- water 15ml each

- still growing in full light

- everything going well

Jan 11<sup>th</sup> 2024  
12<sup>th</sup>

- Day 3 of growing

- nothing visual

- no sprouts

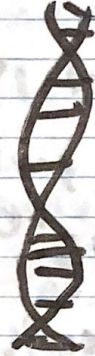
- watered

- I think plant 3 is the best

because it look very rich  
in nutrients with both soils

combined

- going well



Jan 13<sup>th</sup> 2024

- watered 15ml

- plant 21 has rose to the top a  
little so has p3

- still think plant 3 is the best.

- going well

Jan 14<sup>th</sup> 2023  
Day 4

- watered 15 ml
- I'm guessing each plant has roots because the seed is up a little
- p3 looks very rich and healthy
- 100% light all the same variables

---

Jan 15<sup>th</sup> Day 5

- not watered
- plant 2, seed broke in half
- going well
- 100% light same variables

- water
- plant
- still
- the x
- p 1, 2
- and
- seed

- s
- one
- w
- 1
- bec
- goi

Jan 16<sup>th</sup> 2024

Day 7 of growing.

- watered 15 ml

- Plant 2 & 3 have a sprout

- still think plant 7 three

- they seem to be growing slower

- p 1, 2 has not sprouted

and you can barely see the  
seed/pea.

Jan 17<sup>th</sup> 2024

- 5 looks like all of them have  
one tiny root

- watered 15 ml 100% light

- I think they're growing slower  
because the temperature dropped

- going well

Jan 18<sup>th</sup> 2024  
Day 9

- P2 and P3 sprouted
- water 15 ml
- wonder why plant 1 hasn't sprouted
- going well

Day 11 Jan

- hot w
- going
- P1 spr
- P2

Day 10 Jan 19<sup>th</sup> 2024  
P-1 seed rose up suggesting there's roots

P2 and P3 have visibly sprouted - will take

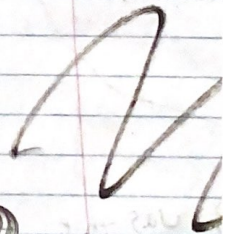
- going well

- water 15 ml out tomorrow

- same variables

- all sprouts very green unlike last experiment

- water
- P1 spr
- same
- going



027

Day 11 Jan 20<sup>th</sup>

- hot water d
- going well
- P1 sprouted
- P2 & P3 are legit now

San 21<sup>st</sup> 0 12

24

- water d 15 ml
- P1 & P2 & P3 are legit
- same variables
- going well.

Suggest

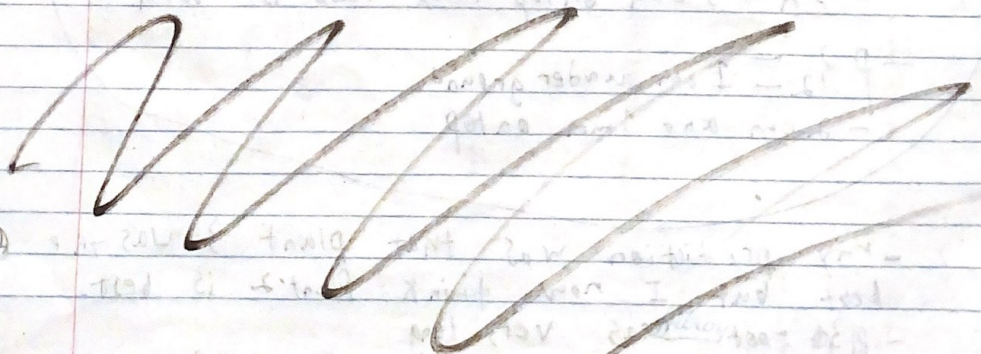
visibly

take

tomorrow

green

nt





Jan 22

# took out plants

p3 soil looks rich

p2 soil looks flacky

p1 soil looks dry

- when the soil had the charged carbon the roots were whiter.
- all on top was very green = healthy
- when just potting soil roots were greener

- plant one 1st not so very well
- p1 1 3cm and 7mm roots - none above.
- did not sprout and short roots

- plant 2a looks healthy has a nice medium size root with small roots off of the main one
- p2 1 = 4cm and 5mm under ground
- 1cm on top - tiny leaves for both
- p2 2 = 7cm and 5mm under ground
- 2cm and 7mm on top

- p3 1 = 13cm underground but with no side roots " - 3cm on top tiny leaves for both
- p3 2 = 1cm underground
- 2cm and 1mm on top

- my prediction was that plant 3 was the best but I now think plant 2 is best.
- p3 1 root was very long
- plant 2a root was medium but had side roots.

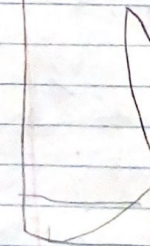
E.

Hi my name  
world hunger been  
out there. I  
better with  
first I  
conditions  
combine the  
to make  
plants to

at some



one



plants

Carbon  
why  
of were

a nice  
roots of

no side  
both

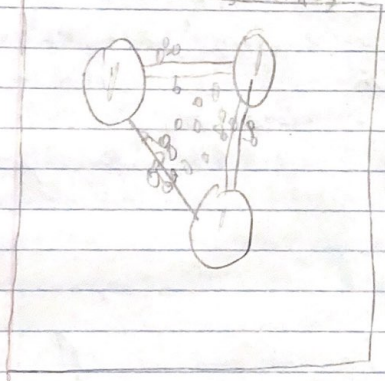
was the  
best  
roots.

# Trifold Explanation Section 1

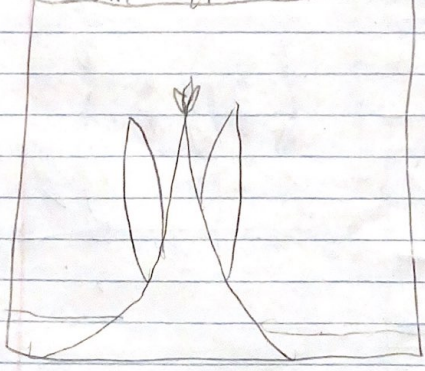
Hi my name is Simon and my goal is to chip into world hunger because I know <sup>that</sup> there are alot of hungry people out there. I'm doing this by trying to <sup>make</sup> plants grow fast better with more food on them. I'm growing peas. But first I need to find out what the best growing conditions for plants. I'm testing light and soil after that I'll combine the best amount of light and type of soil to make ultra food that helply works on all plants to make a bigger brighter future.

pictures in Explanation will be spread out based what they are.  
one of a bright future

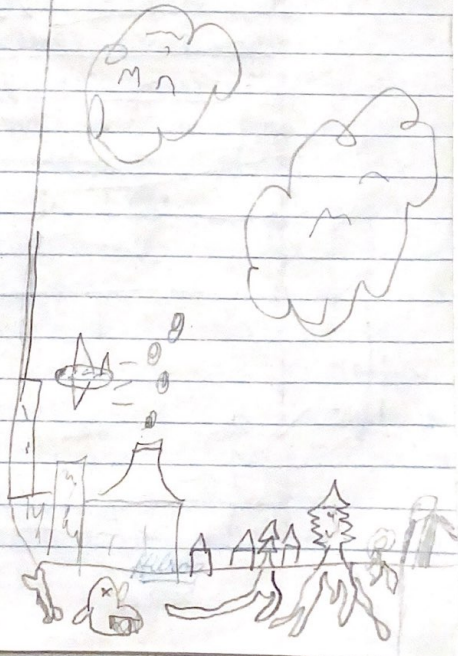
1 of something Siney



one of a pea plant



No hunger



Trifolium Section 2  
 Experiment 1 (light)

EX 1

Hypothesis:

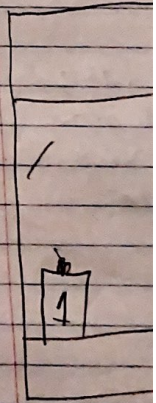
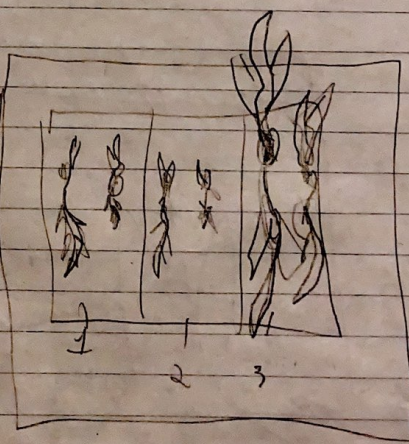
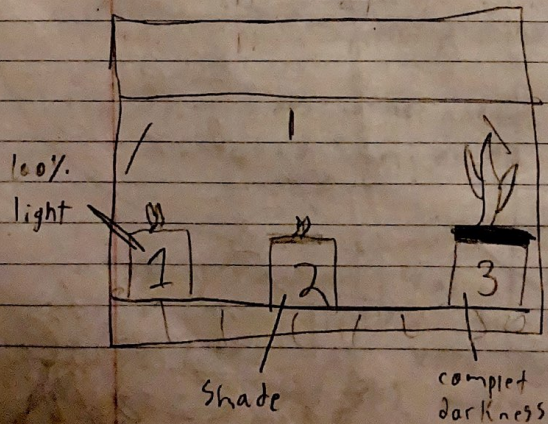
100% light will be the best because plants need light to grow.  
 methods  
 for this experiment I tested amounts of light, full light, shade and no light at all. I used a grow light, ~~and~~ potting soil and peas.

Plant 1 as you can see in the picture is the greenest and shortest while Plant 3 no light is super tall but greenish-yellowish max my hypothesis is wrong. Plant 2 is green to but still short. I water the plants 15ml each day in room temperature they all get 12 hours of light.

Results

The results were surprising because of the roots. Plant 3 grew very long roots but the roots did not look healthy they were skinnier with only a couple roots that were really long. Plant 2 had a little more leaves and like roots that looked kind of healthy but could do better. Plant 1 looked super healthy with nice brown thick roots with many coming off of it. My hypothesis was right.

hypothesis Now experiment I think interesting but you the one will be the best cause it looks very rich in nutrients. Some amount plants get 100% light time plant or soil rich store height. Carbon rich looks like had a m soil and carbon.



# Experiment 2 Soil

## EX 2 soil

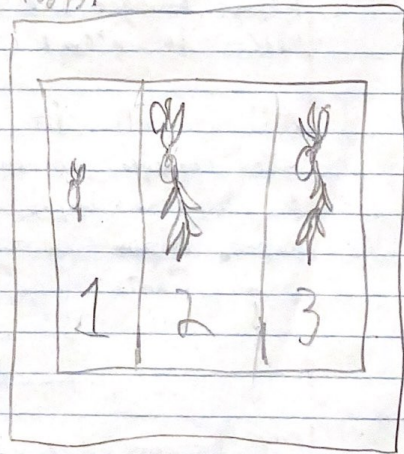
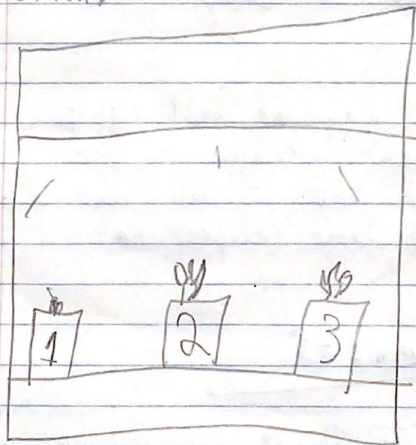
in 2  
ht)

75  
were surprising  
the roots Plant  
long roots but  
not look healthy  
or with only a couple  
of roots long.  
a little more  
of roots that  
health but  
Plant 1 looked  
with nice  
with many  
I was right.

hypothesis New experiment 2 was  
I think interesting at first I'll tell  
you the methods = grew the  
Peas for 12 days just like  
Experiment 1 I watered the  
same amount 15ml except the  
Plants got 100% light because  
100% light worked best last  
time Plant one had potting  
soil which was healthy and  
stayed bright Plant 2 had charred  
carbon which is flakey and  
looked like charcoal Plant 3  
had a mixture half potting  
soil and half charred  
carbon.

### Results

Once I took the plants out  
and looked at the roots I know  
my hypothesis was wrong.  
Plant 3 roots were unhealthy  
The Pea only had one big with  
one that was long but dry  
and unhealthy. Plant 2 was  
actually the best with a medium  
sized root with leaves coming  
of the main one the leaves  
were green and healthy. Plant 1  
was OK the sprout was  
shorter and less pleasing than  
Plant 2, there were almost  
no roots.

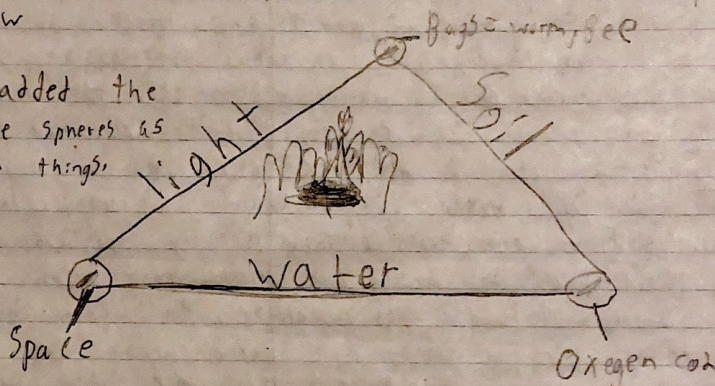


Milroy

## Conclusion

So I learned a lot by testing this experiment. I learned about what I call the Plant triangle kind of like the fire triangle. It's about what plants need. It's in the picture below.

I added the little spheres as extra things.

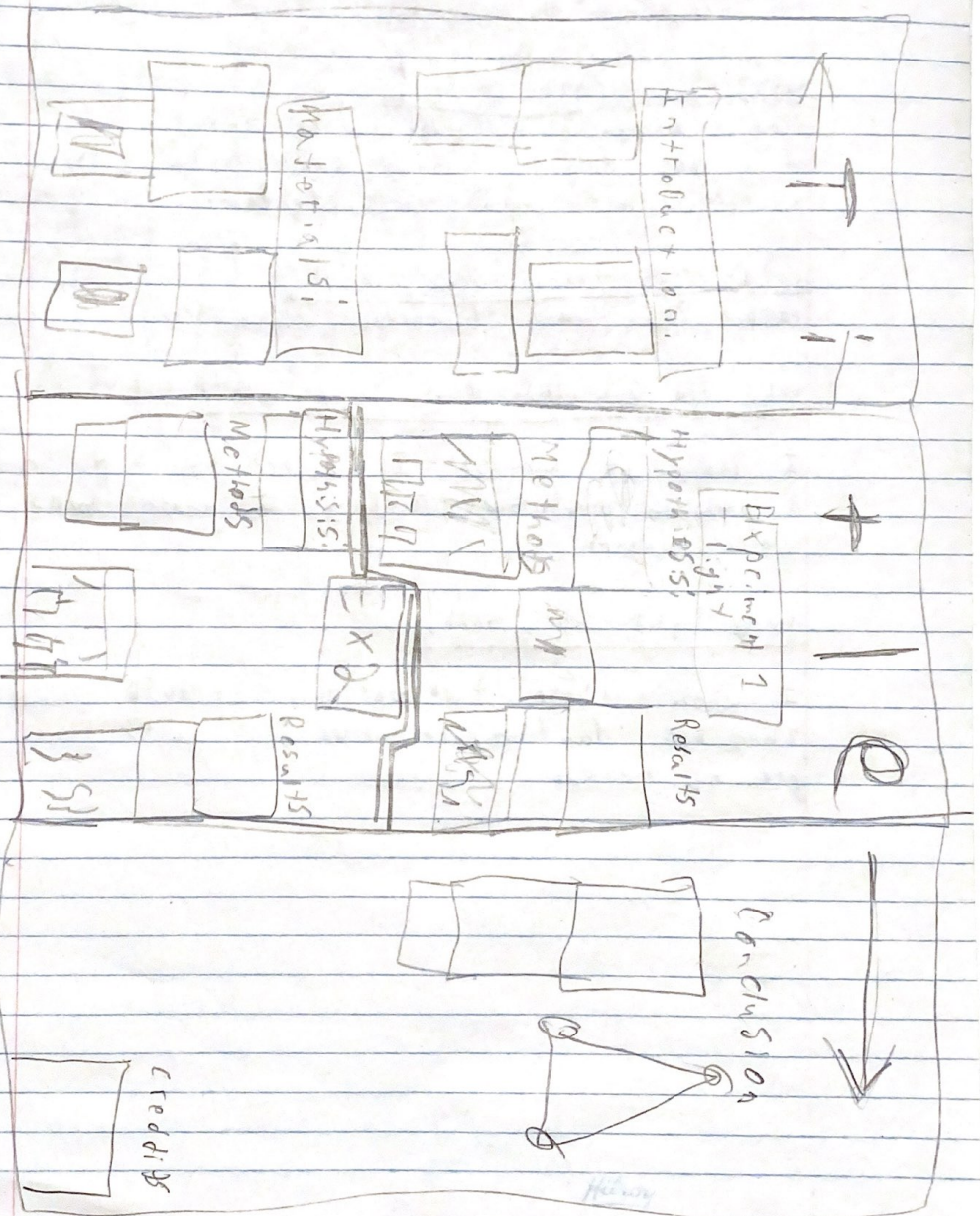


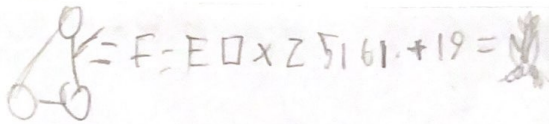
I also noticed some flaws like maybe temperature as it got colder the room temperature properly changed and maybe the plants needed more room space to grow.

All in all if you combine full light, use charged carbon you're granted to get a healthy happy plant and if you want a super happy plant add some compost to your plants.

## Credits

My Parents for printing things and helping me set up my grow light.  
Teachers for teaching me about formatting and plants also giving me the trifold and supports.





Why peas? I chose peas because they're healthy, easy, and fast to grow.

What is charged carbon?

Charged carbon is this (hard to sample). It's the only substantial and reusable growing media that made out of <sup>carbonized</sup> biomass.

What does carbonized mean?

Carbonized means burned without  $O_2$ .

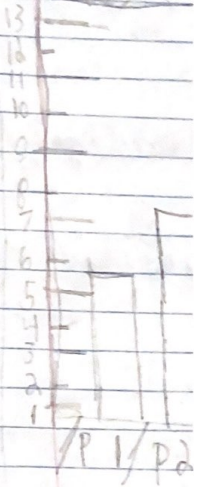
Why did you choose this experiment?

I chose it because I wanted to chip into a problem and the problem I chose was world hunger.

Why light and soil?

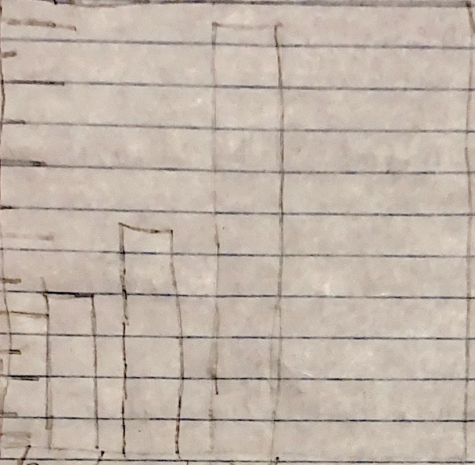
I chose those two variables because they are fundamental to a plant's growing needs.

Resu



# Result 1

13  
12  
11  
10  
9  
8  
7  
6  
5  
4  
3  
2  
1



/P1/P2/P3/

althy

growing

ip into  
was

Harou