

# Mungbean Growth

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## Mungbean Sprout Growth

Mungbeans were sprouted in 3 petri dishes at varying temperatures. The germination%, length, and weight were measured at 24 hour intervals for 5 days. With this data, we can determine if the temperature had an effect on the growth. We would also like to determine the ideal temperature of those tested. The source of the data was Islam et al. (2017).

## Temperature & Light Conditions

The 3 temperatures that are being compared are 25°C, 30°C, and Ambient (ranging from 21°C - 31°C). Seeds were grown at constant temperature by placing them in a controlled incubator. Seeds were grown in darkness for this set of data.

## Growing Medium

The seeds were grown in petri dishes, placed on a wet tissue used to keep them moist. There were 10 seeds per sample. Seeds were soaking in water for 12 hours prior to placing them in the dishes which was determined to be to optimal time.



Figure 1: Germinated Mungbean Seeds in Petri Dishes

Table 1: measured length &amp; weight

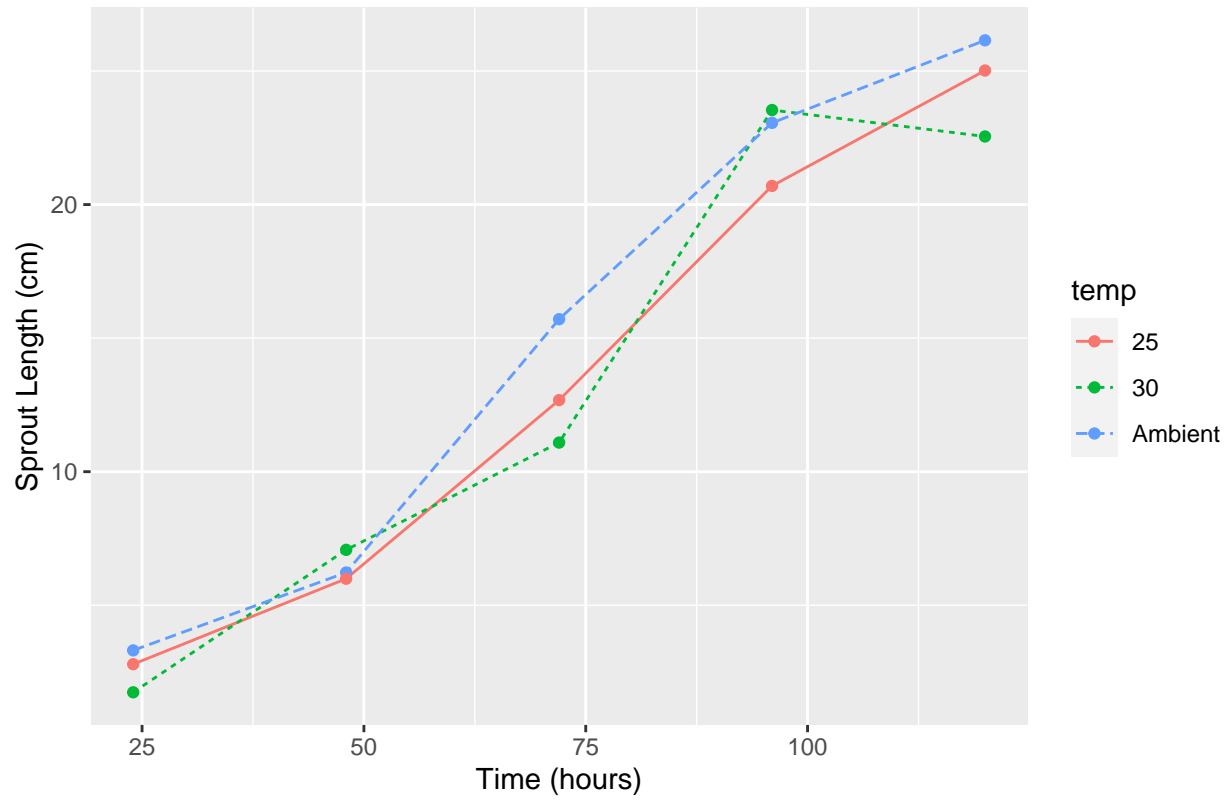
temp	duration	weight	germination	length	sproutwt	sproutdrywt
Ambient	24	0.63	98.0	3.310	1.28	0.46
Ambient	48	0.60	95.0	6.225	1.98	0.42
Ambient	72	0.64	97.5	15.710	3.98	0.42
Ambient	96	0.64	90.0	23.060	4.72	0.38
Ambient	120	0.61	99.0	26.150	4.98	0.41
25	24	0.58	95.0	2.793	1.13	0.44
25	48	0.59	97.5	5.993	1.93	0.41
25	72	0.56	92.5	12.680	3.96	0.39
25	96	0.54	100.0	20.700	4.85	0.41
25	120	0.53	100.0	25.020	5.26	0.42
30	24	0.56	97.5	1.740	2.45	0.53
30	48	0.58	95.0	7.075	2.48	0.47
30	72	0.59	90.0	11.090	2.93	0.45
30	96	0.58	90.0	23.540	3.98	0.40
30	120	0.58	97.5	22.550	4.14	0.41

```
## [1] "Summary of Data"
```

```
##      temp      duration      weight      germination      length
## 25      :5  Min.      : 24  Min.      :0.5300  Min.      : 90.00  Min.      : 1.740
## 30      :5  1st Qu.: 48  1st Qu.:0.5700  1st Qu.: 93.75  1st Qu.: 6.109
## Ambient:5  Median : 72  Median :0.5800  Median : 97.50  Median :12.680
##           Mean   : 72  Mean   :0.5873  Mean   : 95.63  Mean   :13.842
##           3rd Qu.: 96  3rd Qu.:0.6050  3rd Qu.: 97.75  3rd Qu.:22.805
##           Max.    :120  Max.    :0.6400  Max.    :100.00  Max.    :26.150
##      sproutwt      sproutdrywt
## Min.      :1.130  Min.      :0.380
## 1st Qu.:2.215  1st Qu.:0.410
## Median :3.960  Median :0.420
## Mean   :3.337  Mean   :0.428
## 3rd Qu.:4.430  3rd Qu.:0.445
## Max.    :5.260  Max.    :0.530
```

## Growth Plot

Plot of Length by Time



## Weight Plot

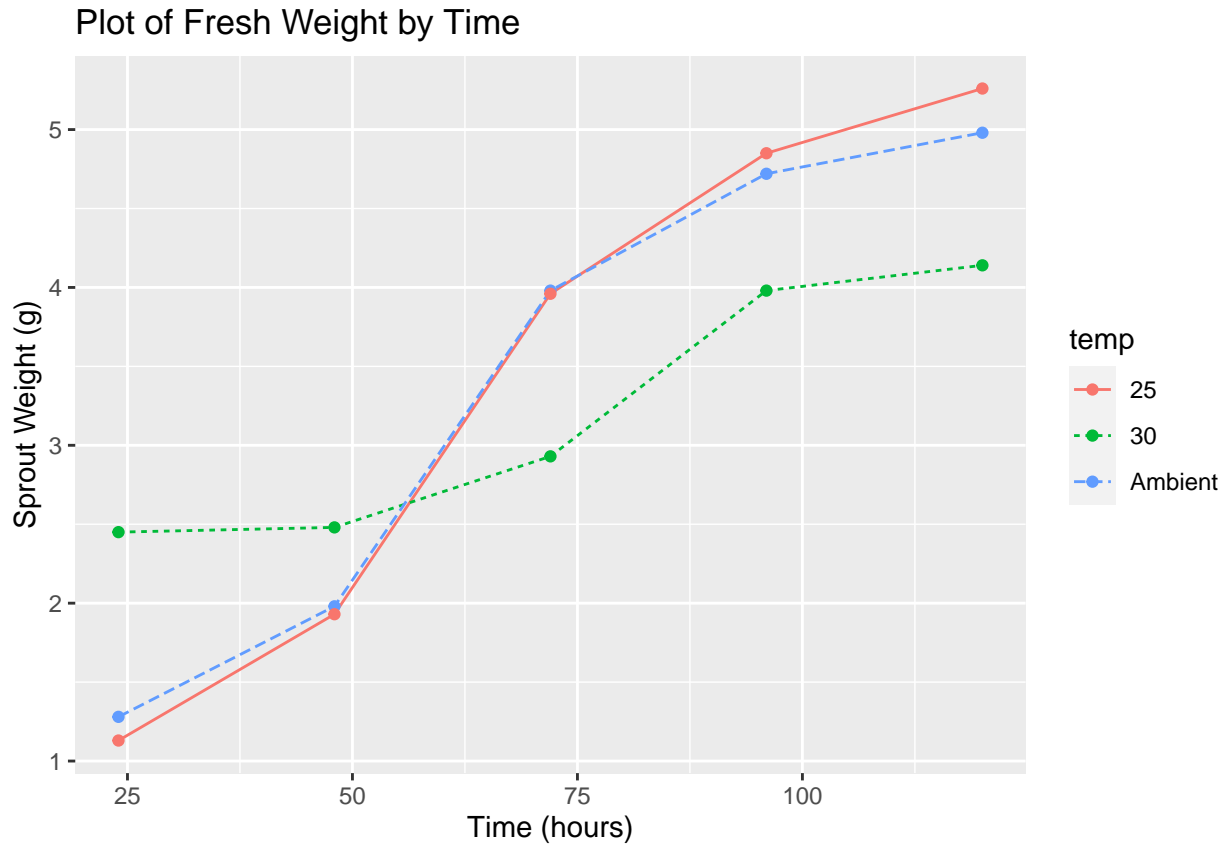


Table 2: Lengths Compared at 3 Temps

duration	Ambient	25	30
24	3.310	2.793	1.740
48	6.225	5.993	7.075
72	15.710	12.680	11.090
96	23.060	20.700	23.540
120	26.150	25.020	22.550

Table 3: Normalized Data

duration	Ambient	25	30
24	-1.1532271	-1.1279693	-1.1952723
48	-0.8629536	-0.7888643	-0.6387859
72	0.0815554	-0.0802407	-0.2199868
96	0.8134627	0.7696413	1.0786553
120	1.1211626	1.2274331	0.9753898

## References

Islam, Md, MK Hassan, SR Sarker, Anas Rahman, and Md. Solaiman Ali Fakir. 2017. “Light and Temperature Effects on Sprout Yield and Its Proximate Composition and Vitamin c Content in Lignosus and Mung Beans.” *Journal of the Bangladesh Agricultural University* 15 (December): 248. <https://doi.org/10.3329/jbau.v15i2.35070>.