

The Effect of Electricity on Plant Growth

Results

If electricity is applied to the soil of growing rapid radish plants for various lengths of time, then plant growth of the rapid radishes will increase when voltage is applied to the plant for twenty minutes because according to the New York Times (1985), research workers are finding evidence that plant cells' sensitivity to electric current can be exploited to enhance their growth.

Table 1.1

Tray A: The Effect of Electricity on Plant Growth (mm)								
	Time (h)							
	0	72	144	216	288	360	432	504
1	0.0	0.0	3.0	5.0	5.0	5.0	4.0	3.0
2	0.0	0.0	5.0	13.0	13.0	13.0	13.0	5.0
3	0.0	0.0	4.0	10.5	12.0	12.0	11.0	8.0
4	0.0	1.0	6.0	11.0	11.0	12.0	13.0	6.0
5	0.0	0.0	0.0	3.0	5.0	6.0	5.0	6.0
6	0.0	1.0	8.0	12.0	12.0	12.0	10.0	7.0
7	0.0	0.0	4.0	6.0	9.0	9.0	8.0	5.0
8	0.0	0.0	6.0	9.0	9.0	9.0	9.0	8.0
9	0.0	1.0	6.0	10.0	11.0	11.0	11.0	8.0
Mean	0.0	0.3	4.7	8.8	9.7	9.9	9.3	6.2
SD	0.0	0.5	2.3	3.4	3.0	2.8	3.2	1.7
SE	0.0	0.2	0.8	1.1	1.0	0.9	1.1	0.6

Table 1.1 shows the effect of electricity on plant growth in millimeters during a period of 504 hours in Tray A, which had the battery connected for 0 minutes.

Table 1.2

Tray B: The Effect of Electricity on Plant Growth (mm)								
	Time (h)							
	0	72	144	216	288	360	432	504
1	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0
2	0.0	0.0	2.0	9.0	9.0	9.0	7.0	6.0
3	0.0	0.0	1.0	6.0	11.0	12.0	10.0	12.0
4	0.0	1.0	3.0	10.0	10.0	10.0	10.0	8.0
5	0.0	1.0	3.0	12.0	13.0	13.0	12.0	8.0
6	0.0	1.0	7.0	14.0	14.0	15.0	15.0	13.0
7	0.0	0.0	6.0	9.0	9.0	9.5	11.0	4.0
8	0.0	0.0	3.0	8.0	11.0	12.0	14.0	7.0
9	0.0	0.0	7.0	9.0	12.0	13.5	13.0	8.0
Mean	0.0	0.3	3.7	8.7	10.0	10.6	10.3	7.4
SD	0.0	0.5	2.4	3.7	3.8	4.1	4.2	3.7
SE	0.0	0.2	0.8	1.2	1.3	1.4	1.4	1.2

Table 1.2 shows the effect of electricity on plant growth in millimeters during a period of 504 hours in Tray B, which had the battery connected for 5 minutes.

Table 1.3

Tray C: The Effect of Electricity on Plant Growth (mm)								
	Time (h)							
	0	72	144	216	288	360	432	504
1	0.0	0.0	5.0	11.0	14.0	15.0	16.0	13.0
2	0.0	0.0	3.5	7.0	13.0	13.0	15.0	15.0
3	0.0	0.0	4.5	10.0	11.0	13.0	13.0	14.0
4	0.0	0.0	6.0	14.0	14.5	15.0	14.0	13.0
5	0.0	0.0	1.0	1.0	1.0	2.0	5.0	2.0
6	0.0	2.0	5.0	8.0	10.0	11.0	12.0	11.0
7	0.0	1.0	4.0	11.0	11.0	12.0	13.0	13.0
8	0.0	0.0	5.0	7.0	9.0	10.0	10.0	11.0
9	0.0	0.0	9.0	12.5	13.0	13.0	12.0	13.0
Mean	0.0	0.3	4.8	9.1	10.7	11.6	12.2	11.7
SD	0.0	0.7	2.1	3.9	4.1	3.9	3.2	3.8
SE	0.0	0.2	0.7	1.3	1.4	1.3	1.1	1.3

Table 1.3 shows the effect of electricity on plant growth in millimeters during a period of 504 hours in Tray C, which had the battery connected for 10 minutes.

Table 1.4

Tray D: The Effect of Electricity on Plant Growth (mm)								
	Time (h)							
	0	72	144	216	288	360	432	504
1	0.0	0.0	3.0	8.0	10.0	11.0	10.0	10.0
2	0.0	0.0	5.0	10.0	12.0	13.0	11.0	13.0
3	0.0	0.0	1.0	7.0	10.0	10.0	11.0	10.0
4	0.0	0.0	4.5	9.0	11.0	12.0	14.0	14.0
5	0.0	0.0	6.0	11.0	12.0	13.0	12.0	13.0
6	0.0	0.0	5.5	10.0	13.0	13.5	16.0	12.0
7	0.0	0.0	6.0	12.0	13.0	13.0	13.0	13.0
8	0.0	0.0	2.0	8.0	10.0	10.0	9.0	13.0
9	0.0	0.0	8.0	11.0	12.0	12.0	13.0	13.5
Mean	0.0	0.0	4.6	9.6	11.4	11.9	12.1	12.4
SD	0.0	0.0	2.2	1.7	1.2	1.3	2.1	1.5
SE	0.0	0.0	0.7	0.6	0.4	0.4	0.7	0.5

Table 1.4 shows the effect of electricity on plant growth in millimeters during a period of 504 hours in Tray D, which had the battery connected for 20 minutes.

Table 1.5

Final Mean Effect of Electricity on Plant Growth (mm)	
Tray	Mean Height (mm)
A	6.2
B	7.4
C	11.7
D	12.4

Table 1.5 shows the effect of electricity on the final mean of plant growth in millimeters for trays A through D.

Table 1.6	
Current of the Circuit	
(mV)	
Tray	Current (mV)
A	0.0
B	8.0
C	7.9
D	8.0

Table 1.6 shows the amount of current in millivolts that is running through the circuit in trays A through D.

Figure 1.1

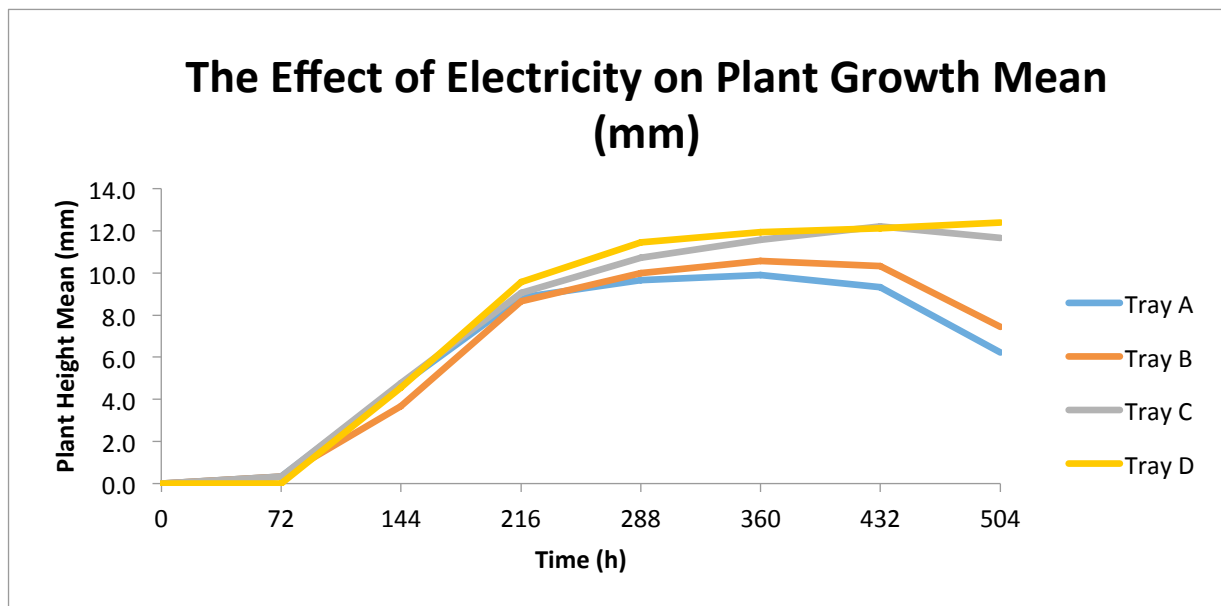


Figure 1.1 represents the mean of the data in tables 1.1 through 1.4 of the effect of electricity on plant growth.

Figure 1.2

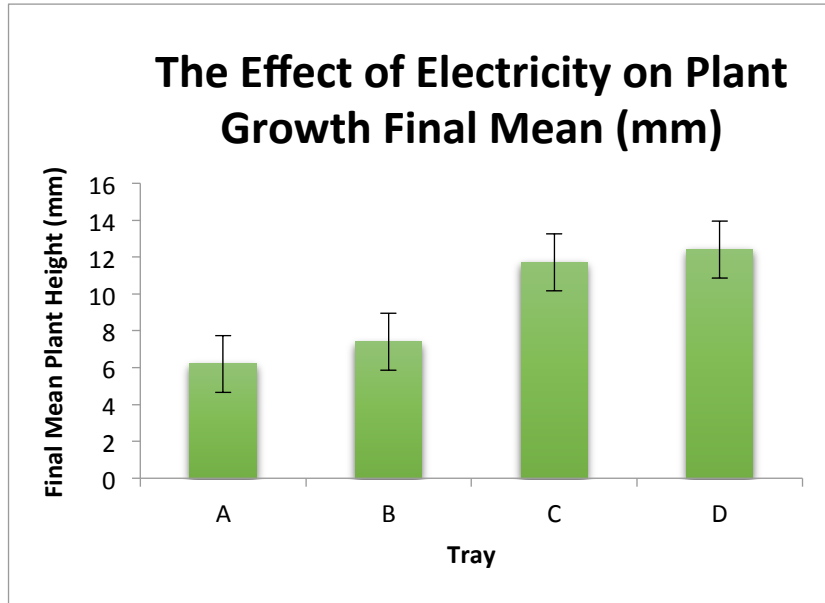


Figure 1.2 represents the final mean effect of electricity on plant growth in trays A through D.

Figure 1.3

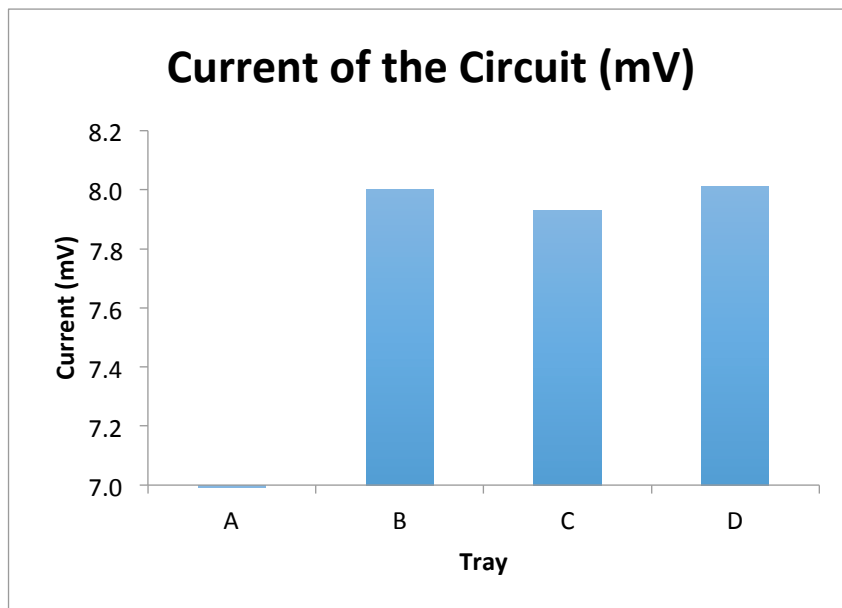


Figure 1.3 represents the amount of current in millivolts that is running through the circuit in trays A through D.

The range of the standard errors are 0.0 to 1.4 mm. More trials reduce the standard error and there were 9 trials in trays A through D, a total of 36 trials. If there were more than 36 trials, the standard error would have been lower. Looking at the graphs and tables, it can be concluded that tray D had the most growth, with an average height of 12.4 mm. Voltage was run through tray D the longest, at 20 minutes. Tray A had the least growth, with an average height of 6.2 mm. No voltage was run through Tray A, and was the control variable in the experiment. What could be improved in the experiment is the measurement of the individual plants, seeing that some parts of the plant were in the soil and data could not be collected on how tall that part was. Another thing that could be improved is an easier way to wrap the copper wire around each seed, as the copper wire was difficult to bend into shape.