

Sulfide Germination Trial
10 day time period 10/4/13 - 10/14/13
sulfide exchanged on 10/7, 10/9, and 10/11
Target sulfide treatments 0, 3, 10, 30, 90 uM
Actual Sulfide treatment levels varied a bit (see Sulfide levels worksheet), highest measured means were 0, 4, 11.5, 34, and 104 uM
Highest measured initial Sulfide was 0.5, 3.13, 9.64, 25.36, 83.75 uM
However Sulfide appears to have been produced in the bottles, ending sulfide concentrations on 10/14 were 10.9, 13.5, 20.7, 38.8, 91.5 uM
Endpoint measures were germination (> 1cm mesocotyl growth), replicate mean mesocotyl weight (mg), and final mesocotyl length of each germinate

Sulfide Trtmnt (uM)	Replicate Bottle	Number of Germinants	Number of Non-Germinants	Germination Rate (%)	Weights			Weights			Ratio Stem Wt: Seed Wt	Mean Stem Wt (mg)	Mean Stem Length (cm)			
					----- Germinated Seeds -----			-- Mesocotyl separated from seed --								
					Seeds + Tare (g)	Tare (g)	Seeds (mg)	Stems + Tare (g)	Tare (g)	Stems (mg)						
0	1	37		12	75.51	1.9708	1.4484	522.4		1.5083	1.4553	53		0.0921	1.43	7.05
0	2	36		13	73.47	1.9365	1.4491	487.4		1.5142	1.4552	59		0.1080	1.64	9.03
0	3	44		6	88.00	1.9671	1.4285	538.6		1.4522	1.3886	63.6		0.1056	1.45	7.53
3	1	32		15	68.09	1.8845	1.4277	456.8		1.4704	1.4264	44		0.0879	1.38	7.12
3	2	46		4	92.00	1.9915	1.4387	552.8		1.4983	1.4271	71.2		0.1141	1.55	7.74
3	3	40		9	81.63	1.901	1.3791	521.9		1.5043	1.4451	59.2		0.1019	1.48	7.71
10	1	45		5	90.00	1.9955	1.4442	551.3		1.4879	1.4352	52.7		0.0873	1.17	6.98
10	2	44		2	95.65	1.963	1.4553	507.7		1.5138	1.4451	68.7		0.1192	1.56	9.50
10	3	37		12	75.51	1.9326	1.4403	492.3		1.506	1.4486	57.4		0.1044	1.55	8.88
30	1	32		18	64.00	1.8872	1.4372	450		1.4658	1.4328	33		0.0683	1.03	6.63
30	2	45		5	90.00	1.9921	1.441	551.1		1.5252	1.4524	72.8		0.1167	1.62	8.46
30	3	42		7	85.71	2.0133	1.4575	555.8		1.5055	1.4418	63.7		0.1028	1.52	7.88
90	1	32		18	64.00	1.8069	1.4038	403.1		1.4646	1.419	45.6		0.1016	1.43	7.49
90	2	40		10	80.00	1.9297	1.3941	535.6		1.5176	1.4394	78.2		0.1274	1.96	10.76
90	3	44		5	89.80	1.9808	1.4014	579.4		1.5038	1.43	73.8		0.1130	1.68	9.54

One Way A Friday, October 25, 2013, 12:35:30 PM

Data source: Data 1 in Notebook 1

Dependent Variable: Germination (%)

Normality T Passed (P = 0.411)

Equal Varia Passed (P = 0.919)

Group	N	Missing	Mean	Std Dev	SEM
0	3	0	78.993	7.867	4.542
3	3	0	80.573	11.993	6.924
10	3	0	87.054	10.389	5.998
30	3	0	79.905	13.94	8.048
90	3	0	77.932	13.022	7.518

Source of V	DF	SS	MS	F	P
Between Gr	4	154.247	38.562	0.285	0.881
Residual	10	1355.035	135.504		
Total	14	1509.282			

Mesocotyl Stem Lengths (cm)

Sulfide	0	0	0	3	3	3	10	10	10	30	30	30	90	90	90
Replicate	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Germ Counts															
1	9.5	5.6	6.1	7.6	12.3	4.6	5.6	16.5	5	9.1	11.4	6.5	5.8	9.6	9.4
2	5.3	9.4	7.2	9.5	7.2	8.7	5.4	13.5	5.1	9.8	5.4	5.2	7.8	13.3	3.6
3	4.6	8	10.1	8.2	9.8	11.8	6.7	11	9.3	7.8	8.1	8.4	6.9	11.8	12.9
4	5.2	8	9	5.9	10.9	10	10	8	6.8	8.9	7.3	5.5	12.5	9	7.4
5	10.5	5.5	10.3	10.6	13.3	5.6	7.1	9	16.1	9.1	7.8	7.5	7.5	12.5	7.9
6	6.9	11.5	6.5	5.8	9.6	8.7	5.5	6.7	12.3	6	8.6	9.4	6.5	14.7	8.1
7	8.5	13.2	5.4	9.6	8.5	7.3	2.4	4.8	9.5	4.2	5.7	8.8	5.4	13.3	9.3
8	4.2	9	4.8	1.5	9.7	5.9	8.1	9.6	11.7	7.8	8.5	8.3	10	10	7.2
9	5.2	6.5	6.7	11.2	7.7	6.5	8.2	7.8	5.8	5.7	10.1	5.7	6.9	9.1	11.1
10	8.5	9.4	3.3	9.9	7.3	4.8	3.4	10.2	4.6	3	6.1	3.9	11.8	12.2	16.2
11	7.4	13.5	6.2	4.4	7.5	11.2	3.5	16	5.4	8.2	6.4	5.1	9.6	14.8	14.5
12	6.9	11.5	6.9	6.6	5.3	12.3	7.5	7.6	4.9	12	5.7	4.6	6.3	11.9	10.8
13	9.2	11	5.7	8.4	6.2	5.5	3.6	12	9.3	3.1	6.4	7.5	9	16.1	5.3
14	6.2	9.2	7	2.4	8.8	8.2	7.1	10.5	12.6	3.6	6.6	8.7	8.8	13.4	11.7
15	13.1	10.5	4.2	9.5	6	7.7	7.9	9.7	1.8	7.3	11.7	11.8	8.1	13.3	11.7
16	13.7	6.3	10	8.4	6	6.5	6.3	13.1	3.3	3.2	5.1	7.6	4.5	11.2	11
17	6.2	10.5	9.6	6.3	8.3	2.5	7.8	12.6	7.2	8.2	6.8	12	2.8	10.2	15.4
18	6.5	7.3	7	8.1	6.5	8.1	6	3.1	10.6	9	6.8	8.7	4.4	10.9	8.6
19	6.1	9.9	7.2	6.5	5.3	6.2	1.8	5.2	5.7	7.2	3.7	13.2	4.2	4.5	11.2
20	5.8	7	2	6.5	7	6.2	8.5	14.1	13.3	7.6	11.4	14.1	5.7	5.1	9.8
21	8.1	11	7.7	9.8	5.5	13.1	7.5	10	12.4	4.1	5.8	9.3	7.5	8	7.9
22	5.8	7	3.5	7.7	5.3	4.3	7.3	8.9	13.3	6.4	16.9	10.8	8.7	9.8	7.6
23	8.8	8.1	11.6	5.8	9.3	8.4	11.5	9.1	17.9	4	11.3	11.4	7.6	6.4	9.2
24	9.9	7.5	7.7	6.3	8.2	6.1	8.8	13.8	10.4	9	14	13.5	5.2	13.6	13.3
25	3.2	11.4	7.7	6.7	12	8.2	7.6	11.7	11.7	5.5	6.8	7	10.8	7.3	14.2
26	3.8	9.9	6.2	7	8.7	8	6.6	9.7	7.5	5.7	8	6.6	9.8	6.7	12.7
27	5.2	11.3	4.7	7.8	12.4	10.7	11.9	3.7	8.1	4.9	10.3	8.9	6.3	8.2	10.4
28	5.7	5.7	8.3	7.5	7.9	9.3	11.2	11.6	7.8	11.5	15.1	7.5	8.2	10.3	12.5
29	8	7.5	9.5	5.5	4.6	9.5	5.8	10.3	13.2	5	10.6	11.7	7.5	7	8.9
30	4.9	15.5	11	7.7	12.7	6.6	6.5	3.8	6.2	7	6.4	6.6	9.5	10.4	5
31	7.1	10.9	9.9	3.2	5.5	5.3	4	11.1	6.7	4.1	14.3	5.9	6.5	11.4	5.7
32	8.2	7.6	6.6	6	3.4	11.7	7.4	12.5	11.4	4.1	6	8.1	7.5	10.1	5.7
33	5.4	8	5.6		5.8	6.1	5.8	7.5	11.2		8.1	5		12.7	11.9
34	12.1	9	7.9		8.1	7	5.5	7.2	11.7		8	7.5		14.5	10.8
35	5.2	8.3	10.2		2.5	5.9	9.5	5.8	10		7.6	6.2		12.7	10.5
36	4.6	3.4	13.6		5.3	7.5	6.6	10.8	4.4		4.6	5.8		8.4	7.3
37	5.5		14		10.4	7.3	7.6	10	4.5		5	7.1		13	6.6

Power of performed test with alpha = 0.050: 0.050

The power of the performed test (0.050) is below the desired power of 0.
Less than desired power indicates you are less likely to detect a differenc

One Way A Friday, October 25, 2013, 12:35:58 PM

Data source: Data 1 in Notebook 1

Dependent Variable: Mean Stem Wt (mg)

Normality T Passed (P = 0.563)

Equal Varia Passed (P = 0.714)

Group	N	Missing	Mean	Std Dev	SEM
0	3	0	1.506	0.116	0.0668
3	3	0	1.468	0.0871	0.0503
10	3	0	1.428	0.222	0.128
30	3	0	1.389	0.314	0.181
90	3	0	1.686	0.265	0.153

Source of V	DF	SS	MS	F	P
Between Gr	4	0.159	0.0398	0.833	0.534
Residual	10	0.478	0.0478		
Total	14	0.637			

Power of performed test with alpha = 0.050: 0.050

The power of the performed test (0.050) is below the desired power of 0.

One Way A Tuesday, December 17, 2013, 10:01:54 AM

Data source: Data 1 in Sulfide Germination.SNB

38		9.8		15.2		7.5	11.7	13.3		9.4	7.2		12.1	3.6	
39		7.6		5.1		11.6	6.8	5.2		4.8	2.8		11.1	9.3	
40		5		5.6		5.8	7.8	7.1		8.1	8.3		9.7	5.9	
41		5.2		7			12.6	3.4		13.8	5.5			11.7	
42		8.8		7.4			9.5	11.1		7.9	5.7			10.1	
43		9.1		6.7			3.2	8.2		9.3				5.7	
44		5		6.5			5.3	11		7				10	
45				5.3			3.5			12					
46				6.5											
Mean	7.0540541	9.025	7.531818182	7.121875	7.7413043	7.705	6.9755556	9.4954545	8.8837838	6.628125	8.46	7.8785714	7.4875	10.7575	9.5363636
Stem Length															

Dependent Variable: Mean Stem Length (cm)

Normality T Passed (P = 0.329)

Equal Varia Passed (P = 0.431)

Group Nam	N	Missing	Mean	Std Dev	SEM
0	3	0	7.87	1.028	0.594
3	3	0	7.523	0.348	0.201
10	3	0	8.452	1.314	0.759
30	3	0	7.656	0.936	0.54
90	3	0	9.26	1.652	0.954

Source of V	DF	SS	MS	F	P
Between Gr	4	6.121	1.53	1.175	0.379
Residual	10	13.024	1.302		
Total	14	19.145			

Power of performed test with alpha = 0.050: 0.074

The power of the performed test (0.074) is below the desired power of 0.