

Lab Exercise 7- Soil Salinity and Seed Germination

1. Graph the germination data from all tables to show the effect of soil salinity on seedling emergence over time. Since two replicates were run for each salinity level and seed type you may average that data for graphing purposes. Summarize your results by explaining the effect of salinity on seed germination of beets, garden beans and cotton.
2. Explain why some of the plants struggled to germinate or grow. What was causing their difficulty? Explain this in terms of the process or processes involved.
3. How can the adverse effects on plants of soils with high soluble salt concentrations be overcome? Explain this for the case where sodium is the dominant soluble salt and the case where any other salt is dominant.

High Salt Tolerant Plant Species

Seed type	NaCl added, %									
	0	0	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4
COTTON										
Number of seedlings germinated or living										
Day 1	0	0	0	0	0	0	0	0	0	0
Day 2	0	0	0	0	0	0	0	0	0	0
Day 3	0	0	0	0	0	0	1	0	0	0
Day 4	0	0	0	0	0	0	1	0	0	0
Day 5	0	0	0	0	0	0	2	0	0	0
Day 6	1	0	0	1	0	2	0	2	0	0
Day 7	1	2	0	1	0	2	0	0	0	0
Day 8	1	2	0	1	0	2	0	0	0	1
Day 9	1	2	0	1	0	2	0	0	0	1
Day 10	1	2	0	1	0	2	0	0	0	0
Day 11	1	2	0	1	0	2	0	0	0	0
Day 12	1	2	0	1	0	2	0	0	0	0
Day 13	1	2	0	1	0	2	0	0	0	0
Day 14	1	2	0	1	0	2	0	0	0	0

Moderate Salt Tolerant Plant Species

Seed type	NaCl added, %									
	0	0	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4
BEET										
Number of seedlings germinated or living										
Day 1	0	0	0	0	0	0	0	0	0	0
Day 2	0	0	0	0	0	0	0	0	0	0
Day 3	0	0	0	0	0	0	0	0	0	0
Day 4	0	0	0	0	0	0	0	0	0	0
Day 5	1	0	0	0	1	1	0	0	0	0
Day 6	3	1	2	4	0	1	0	0	0	0
Day 7	6	2	2	4	3	1	1	0	0	0
Day 8	6	3	2	4	3	1	2	2	0	1
Day 9	6	3	2	4	4	1	3	4	0	1
Day 10	6	3	2	4	4	1	3	4	0	0
Day 11	6	3	2	4	4	1	3	4	0	0
Day 12	6	4	2	4	4	1	3	4	0	0
Day 13	6	4	2	4	4	1	2	4	0	0
Day 14	6	4	2	4	4	1	2	4	0	0

Low Salt Tolerant Plant Species

Seed type	NaCl added, %									
	0	0	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4
BEAN, LIMA										
Number of seedlings germinated or living										
Day 1	0	0	0	0	0	0	0	0	0	0
Day 2	0	0	0	0	0	0	0	0	0	0
Day 3	0	0	0	0	0	0	0	0	0	0
Day 4	0	0	0	0	0	0	0	0	0	0
Day 5	1	0	1	0	0	0	0	0	0	0
Day 6	1	1	1	1	1	0	0	0	0	0
Day 7	1	1	1	1	1	0	0	1	0	0
Day 8	2	1	1	1	1	1	0	1	0	0
Day 9	2	2	2	1	2	1	0	1	0	0
Day 10	2	2	2	1	2	1	0	1	0	0
Day 11	2	2	2	2	2	1	0	1	0	0
Day 12	2	2	2	2	2	1	0	1	0	0
Day 13	2	2	2	2	2	1	0	1	0	0
Day 14	2	2	2	2	2	1	0	1	0	0