**Conclusion:**

Our data definitely showed strong support for our hypothesis. Plants exposed to even relatively low 2% concentration of salt died in less than two weeks. In nature, plants would likely be exposed to saltwater runoff for months at a time. Interestingly, as the experiment went on, we noticed a white residue forming in the soil as some of the salt was left behind by the saltwater. Saltwater absorbed into the soil or remaining in the planter box left this salt behind as it evaporated. This caused a buildup of salt in the soil, and each time the plants were watered, some of this salt was absorbed into the water, somewhat increasing the concentration and likely making the environment less tolerable for the plants. This increase in salt concentration over time is also likely to occur in nature, as evaporation there would also leave behind salt in the soil. This seems to make salting for extended periods of time even more hazardous to the environment.

The water with a salt concentration of two percent isn't even enough to prevent ice from forming on the road, yet it can have devastating effects on the environment. Although the effects may vary from plant to plant, it is highly likely that this salt runoff would have a significant impact on most plants. All plants rely on water to carry out photosynthesis and to maintain rigidity. Furthermore, the salt concentrations would almost certainly be higher than 2% because levels of salt this low would be ineffective in keeping roadways safe.

The plants exposed to sand runoff showed very promising results, as the sand did not seem to affect the plants in any way. Although sand does not prevent ice from forming, it can increase traction and may be an effective alternative in some instances.

Any possible alternatives to salting roads should definitely be reconsidered. Although they may have some drawbacks, we need to fully recognize the damage salt can do to the environment. Many of the alternatives were ruled out due to higher costs than salt.

As salt will most likely remain a deicing agent in at least some situations, perhaps controlling runoff would be a way to protect the environment. By carrying saltwater runoff to treatment plants in gutters along the sides of a road, it is possible to keep the high salt concentrations out of the environment. Saltwater would be very easy to treat, as distilling the water would purify it and leave the salt behind. The salt could be recycled on the roads, somewhat offsetting the costs of the treatment. In addition, the purified water produced in the process could be sold to further fund the project. Ultimately, there would be some financial loss, but we must make sacrifices to preserve the environment.

In addition, salt should be used as efficiently as possible to prevent excess salt from entering the environment. Because salt is so inexpensive, it is cheaper to hastily apply more than necessary than to apply the least needed to de-ice the road. A process known as "pre-wetting" the ice can significantly improve the effectiveness of the salt, as "Pre-wetted salt works faster and at lower temperatures than does dry salt, with less waste" (Salt Institute). In addition, spreading the salt uniformly across the road surface can make the salt more effective. Furthermore, the surfaces of roads should be tested for residual salt before being treated with more to ensure that no more salt is used than is required to make the roadway safe.

**Recommendations:**

We suggest testing a wider variety of plants, as some might be more tolerable of high salt concentrations than others. In addition, it might be interesting to look in depth into some chemical and/or physical alternatives to salt as a de-icing agent. You could also perform our test in a colder climate to better replicate the situation of an icy-roadside, but we are doubtful that this would affect our experiment as temperature has little to do with how salt effects turgor pressure. However, there could be a connection that we did not anticipate and this is a major difference between our experiment and the conditions we were trying to model. Finally, we suggest modeling how much of the salt is physically carried off the road as runoff, though we could think of no practical means of doing this ourselves.