Propagation Methods for *Croton alabamensis var. texensis* in Travis County

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Abstract

The purpose of this series of experiments is to determine the best methods for the propagation of *Croton alabamensis* (Texabama croton). There will be four different factors that will be tested: exposure to natural light, frequency of watering, soil type, and seed modification. Each of these factors will include two to three different types of experiments. Five seeds will be used for each type in an attempt to lower experimental error. This experiment is taking place in order to learn more about the rare shrub and how to protect it in case the species no longer thrives as it should in its natural environment.

Introduction

Croton alabamensis has been witnessed in very disjointed populations. This elusive plant exists and has been noted only in Bibb and Tuscaloosa counties in Alabama, and in Coryell and Travis counties in Texas. These disjointed populations are one odd aspect of *Croton alabamensis*, but there are certainly many more unanswered questions concerning this rare shrub. Aside from the wide disjointedness between counties and states, there is another difference on a smaller scale. The shrub tends to grow in colonies under oak motts, but it has been noticed that different oak motts within close range and with very similar traits will not

necessarily have any growth of Texabama croton. It has also been noticed that the known colonies of Texabama croton in Travis County tend to grow along a specific elevation.

In my research, I intend to begin to answer questions about the specific conditions required by the *Croton alabamensis* through my own attempts to propagate based on four factors. These four factors will be: amount of time exposed to natural light, frequency of watering, seed modification before planting, and type of soil that the seeds are planted in.

Materials

- Approximately 60 *Croton alabamensis* seeds, collected from Pace Bend Park
- Approximately 2-3 pounds of native soil, collected from Pace Bend Park
- One pound of commercial soil
- Potting strips
- Glass containers
- Vinegar
- Water

Methods

Table 1.1- Types of Experiments

	Type 1	**Type 2**	**Type 3**
Exposure to Natural Light	High exposure: At least 8 hours/day	Medium exposure: 3-6 hours/day	Low exposure: Less than 2

			hours/day
Frequency of Watering	High frequency: Every day	Medium frequency: Every 3 days	Low frequency: Once a week
Soil Type	Planted in pots with commercial soil	Control Group: Planted in pots with native soil	
Seed Modification	Soaked: kept in water for 24 hours	Scarified: soaked in vinegar for 10 minutes	

1. Collect seeds from Pace Bend Park. Choose a few healthy colonies with a large number of adult plants. Collect at least 60 seeds and keep seeds from different plants in separate containers.
2. Collect soil from Pace Bend Park. Choose an area that is close to a healthy colony. Collect about 2-3 pounds of soil, including humus and topsoil.
3. Store seeds in cool, dry environment until ready to be planted.
4. For soaking seeds: Place 5 seeds in a glass container and cover with lukewarm water. Leave soaking for 24 hours before planting.
5. For stratifying seeds: Place 5 seeds in a glass container and cover with vinegar. Stir the seeds, and then let them soak for 10 minutes. Wash the seeds before planting.
6. For planting all seeds: Separate potting strips into groups of 5 cells. Mark each group of cells to signify each experiment type. Cells will be filled with designated

soil (soil will be native for all types except one). Seeds will be planted one per cell about 1-1 ½ inches deep. All seeds will be watered after planting.

7. For seed modification experiments: All seeds will be watered every 3 days, exposed to 3-6 hours of natural light per day, and planted in pots with native soil.
8. For natural light exposure experiments: All seeds will be watered every 3 days and planted in pots with native soil. Group 1 will be left outside at all times in order to be exposed to the natural light for the length of the day. Group 2 will be left outside for 3-6 hours every day and taken inside to a dark room for the rest of the day. Group 3 will be left outside for less than 2 hours every day and taken inside to a dark room for the rest of the day.
9. For frequency of watering experiments: All seeds will be exposed to 3-6 hours of natural light each day and will be planted in pots with native soil. For each watering, the plant will be watered until soil is saturated. Group 1 will be watered every day. Group 2 will be watered every 3 days, and Group 3 will be watered once a week.
10. For soil type experiments: All seeds will be watered every 3 days and exposed to 3-6 hours of natural light. Group 1 will be planted in pots with commercial soil. Group 2 will be planted in pots with native soil.
11. Continue to water and expose to natural light as determined by experiment type and record results.

Results

Seeds were collected from Pace Bend Park on October 29, 2012.

Collection Point	GPS Point	Number of Seeds
1	595016, 3370140	15
2	594830, 3369890	16
3	594659, 3369792	32

Soil was also collected on October 29, 2012 from GPS point 592220, 3367994. Seeds were planted on November 10, 2012 with the soaked seeds planted on November 11, 2012.

So far, there has been no evidence of germination. I expect that the most successful types for each experiment will be as follows: medium to low watering frequency, medium natural light exposure, planted in native soil, and seed scarification. I make these assumptions based on what I have seen of their growth in the natural habitat. Because they grow in a natural drought zone, I suspect that they are tolerant to low amounts of water. The shrubs usually grow in the shade of oak motts and, because of this, are not exposed to natural light all day. Because the shrub does not seem to spread easily, I do not expect it to do very well in non-native soil. Based on the amount of deer activity that has been observed around *Croton alabamensis*, I believe that the seeds will grow best if they are scarified initially.

Discussion

There has been little success with the propagation of *Croton alabamensis var. texensis* so far. This experiment is significant because if successful in germination, there will be a greater understanding of this rare plant.

Conclusion

The purpose of this experiment is to have a better understanding of the reproduction methods of *Croton alabamensis var. texensis*. This can lead to a better understanding of the ecosystem in the areas that are inhabited by this rare plant. So far there has been no evidence of germination.

Literature Cited

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