Influence of Seed Pretreatments on the Germination of (*Bursera simaruba* L. Sarg.)

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Introduction

Bursera simaruba **is a tree native to the tropical dry forests of northern South America, the West Indies and Florida. Its common name in the US Virgin Islands is Turpentine tree for its resinous and strong smelling wood. The tree is easily identified by its papery and peeling orange bark. It is deciduous during the dry season (Fig 1).**

Figure 1. *Bursera simaruba* tree, note orange, peeling bark

The seeds of the tree are found in capsules that hang from the branches. Inside each capsule is an aril, that is to say a seed covered in red flesh (Fig. 2). Birds eat the aril, and excrete the hard seed.

Figure 2. Capsules of purplish seed capsules of *B. simaruba*. Note the RED aril in center of picture where the two sides of the capsule have fallen off.

Objective :

Passage through the digestive tract of a bird or animal, often increases seed germination. We wanted to see if we could increase seed germination by mimicking the passage through a bird's digestive tract via pre-treatments.

Materials and Methods:

Two hundred *B. simaruba* seeds were divided into four groups of 50. Each group was assigned and subjected to one of four treatments before planting. The treatments were soaking in sulphuric acid for 4 minutes, sulfuric acid, sandpaper scarification, hot water, and a. Seeds were soaked in sulfuric acid for 4 minutes; the hot water treated seeds were placed in water heated to 70˚ C , the water was allowed to cool and the seeds soaked in that water for a 24 hours.; the scarified seeds were sandpapered until part of the outer coat was removed. Seeds assigned to the control, received no treatment and were planted as is.

The four groups of seeds were planted in a 6x8

Figure 2 *B.simaruba* seedlings; germination is more prevalent in scarification and controlled

Results and Discussion

The data collected showed the sandpaper scarification treatments yielded the quickest germination, while hot water treatments yielded the lowest germination rates (figure 4). The gibberellic acid (GB) and sulfuric acid treatments had similar germination rates; the sulfuric acid did have a five percent greater rate of germination than the GB acid. The controlled seeds yielded greater germination rates than all treatments except the sandpaper scarification. We hypothesize that the seeds in the hot water treatment may have been exposed to too much heat, thus reducing the viability of the seeds. Average seed germination peaked at 66.7 percent in the sanpaper scarified seeds and a minimum germination rate of 20.83 percent in the hot water treated

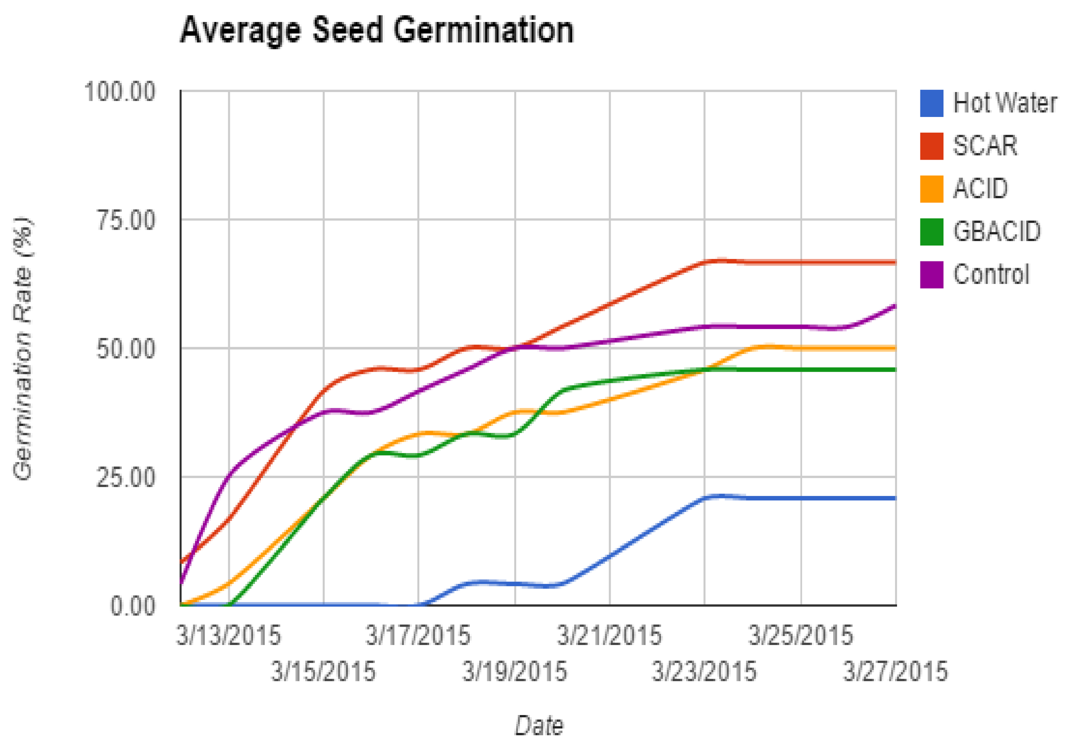

Figure 3 Average seed germination of B.simaruba.

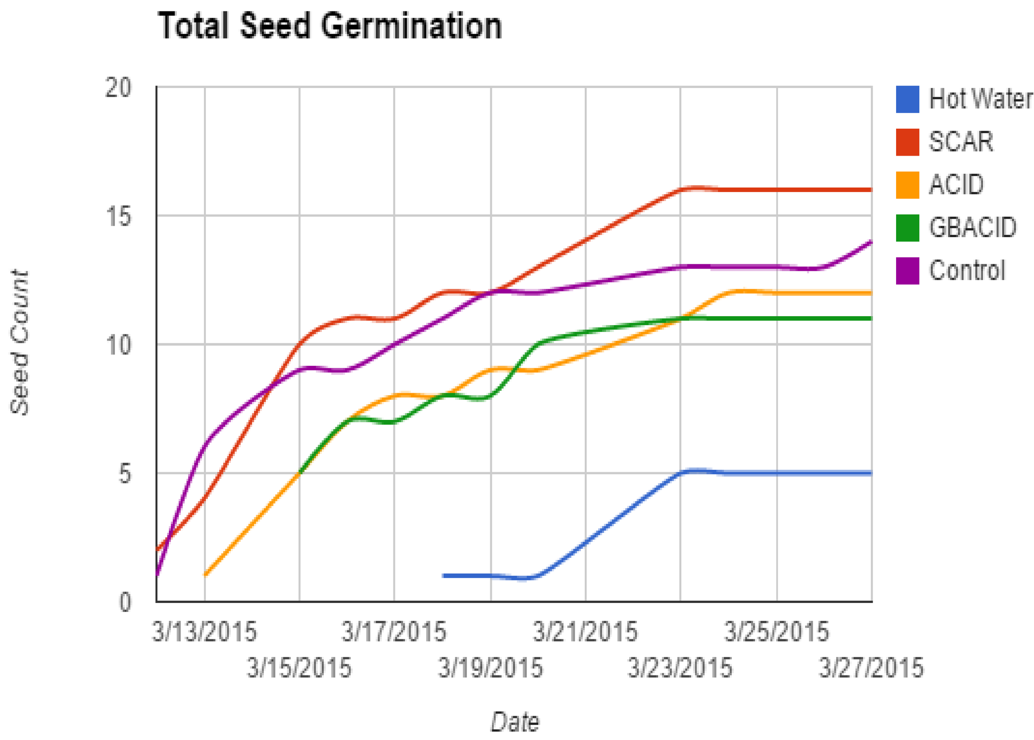

Figure 4 Total Seed germination of *B.simaruba*.

Conclusion

The most effective treatments were the sandpaper scarification and the controlled seeds. Which yielded germination rates of 66.7 percent and 58.33 percent respectively. The data that has been analyzed will be compiled with data in the Fall 2015 semester to observe any variances in the seeds' germination based on the growing season (wet or dry). A potential change the experiment may include modifying the duration of the treatments. This may be done in tandem with the replication of the original project.

Acknowledgements

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