

Final Report
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Wildflowers of Florida, Inc.
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Improving germination of *Mimosa strigillosa* for seed application

Grant Methods

Mimosa strigillosa seed will be treated by scoring it with abrasive media. Two small scale scoring devices will be used to process the seed. A tumbler, often used to polish rocks and other materials, and a vibratory cleaner often used to polish materials will be used to treat the seed. Three media types will be tested over four different durations of treatment. The three media will consist of a soft walnut hull media, 80 grit sand blast media, and diatomaceous earth. Each media and seed mix will be tumbled or vibrated for four different time periods, 30 seconds, 1 minute, 3 minutes and 10 minutes. A no treatment baseline replicate will also be planted for comparison. Three hundred seeds will be treated in each batch and then transplanted into three replicate seedling flats of 100 for germination in a greenhouse controlled environment. Statistical comparisons between treatment devices, between treatment media, and between treatment duration within a media type will be evaluated.

Results

Treatment of seed by the vibratory cleaner was conducted in March 2008 with soft walnut hull media, 80 grit sand blast media, and diatomaceous earth. Seeds were treated with each media for four different time periods, 30 seconds, 1 minute, 3 minutes and 10 minutes. Three flats of 72 cells were planted with seed from each media and time period along with a control of no treatment. No significant germination occurred in any of the treatments.

In early May 2008 after consultation with Dr. Jeff Norcini additional treatments of 1 hour and 3 hours were tried with each media and 3 groups of 100 seeds from each media treatment were soaked overnight to determine if the seeds had been adequately scored to imbibe water. The three hour treatment with the 80 grit media produced swelling 6% of the treated seed as compared to 1% of the control no treatment seed.

Tumbling of the seed with soft walnut hull media, 80 grit sand blast media, and diatomaceous earth was conducted for three sets of 100 seeds for 30 seconds, 1 minute, 3 minutes and 10 minutes, one hour and three hours. The tumbling process produced no significant increase in germination for the seed treated for 30 seconds, 1 minute, 3 minutes, 10 minutes, and one hour. Only seed treated with abrasive 80 grit media for three hours produced a germination increase of 3% above the control no treatment.

An additional treatments not originally proposed was conducted by lining the tumbler with self stick sandpaper of 80 grit and tumbling the seeds for one, two, three, four, five, and six hours. Seeds treated by tumbling were soaked over night to determine the percentage of treated seeds that imbibe water. Seed treated by tumbling with 80 grit sandpaper increased the germination of the seed as follows:

1 hour	3%
2 hours	5%
3 hours	4%
4 hours	4%
5 hours	5%
6 hours	6%

Analysis

None of the various treatment methods increased seed germination significantly. The laboratory tests of the seed used demonstrated by tetrazolium dye that 91% of the seed was viable and germination was 0%. In the past standard scarification by high speed sanding drum produced germination of 40% or greater but also caused the loss of as much as 10% of the seed. In this research treatment of seed by long duration and with a media of at least 80 grit produced the only significant increase in germination. The seed coating on this species is exceptionally durable and may require several years to degrade in the wild. Further research will be conducted with coarser media and higher tumbling speeds to determine the optimal treatment method.

Conclusion

Standard scarification methods are the best at increasing germination of *Mimosa strigillosa*. Low speed tumbling of the seeds with 80 grit sand paper for 6 hours will increase germination by about 6%.