IMPROVING GERMINATION RATES FOR SELECT NATIVE PERENNIAL SEEDS OF THE SONORAN DESERT

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Table 1. Tests and treatment methods used on selected species.

- **Embrosia dumosa**
  - Imbibition: Bleach cleaning
  - Mechanical Scarcification: GA Scarcification
  - Cold Scarcification: Cold Stratification

- **Encelia farinosa**
  - Imbibition: GA Scarcification
  - Mechanical Scarcification: Cold Scarcification
  - Cold Scarcification: Cold Stratification

- **Hilaria rigida**
  - Imbibition: GA Scarcification
  - Mechanical Scarcification: Cold Scarcification
  - Cold Scarcification: Cold Stratification

Discussion

**A. dumosa** seeds could require a longer bleach wash, as almost all seeds were affected by fungus after 2 weeks. However, when seeds were subjected to UV light for 2 h and then sown into a sand substrate, they germinated much more effectively after the 2 week period.

Literature suggested that *A. dumosa* emergence improves with 30 d of cold stratification (Graves et al., 1975). Because outplanting studies are time-sensitive, it is valuable to test whether a shorter cold stratification period can accelerate germination. A cold stratification less than 30 d did not improve germination.

**E. farinosa** germination rates were improved with GA treatment at 500 ppm concentrations only when its seeds were scarified. The act of mechanically nicking the seed coat may not have been sufficient enough to break dormancy. Scarcification, along with GA, resulted in a higher percent germination than nicking alone.

**H. rigida** seeds did not show an improved germination rate with any of 3 different GA concentrations. Overall average germination percentages were still low. As the 60 s bleach wash improved germination, a cleaning treatment along with GA may help to break dormancy.

Hypotheses

The goals of this study are to identify treatments that effectively increase the germination rates of native perennial seeds. Specifically, I tested the following hypotheses:

- Rinsing seeds with a bleach solution before germination will reduce the potential for fungal infections.
- Seeds subjected to a longer rinse time in bleach solution will have reduced fungal infections, and therefore an increase in germination rates.

**Embrosia dumosa** seeds experience a cool and moist fall and winter season before germination. Therefore, a 30-day stratification in cold, moist sand will improve *E. dumosa* germination compared to seeds stored at room temperature after field collection.

Mechanical scarification and gibberellic acid (GA) will individually and together increase the germination rate of *Encelia farinosa* compared to seeds not treated with either treatment. *E. farinosa* seeds treated with both will result in the highest germination rates.

Increasing amounts of GA will result in increasing germination rates for *Hilaria rigida*.