

Note

Effect of Pre-treatments on Seed Germination of *Serianthes nelsonii* Merrill (Fabaceae)

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Serianthes nelsonii Merrill is an endemic leguminous tree that grows in native limestone forest in the Mariana Islands. It is recognized as an endangered species by the United States Fish and Wildlife Service (U.S. Fish and Wildlife Service 1993) with a current population of 121 on the island of Rota and only one mature tree on Guam (Wiles et al. 1995, 1996). Wiles et al. (1996) pointed out that the plant decline was mainly due to browsing from introduced animals and infestation of arthropods. In an effort to increase numbers of *S. nelsonii* plant propagation in the nursery from field-collected seeds has been attempted at the University of Guam and the Guam Department of Agriculture.

Several pre-treatments were recommended for seed germination of various leguminous plants (MacDicken 1994). Common methods include soaking seeds in water for 24 hours, hot water treatment, acid treatment, and nicking. However, there have been no reports on seed pre-treatment of *S. nelsonii*. The objective of the study was to find treatments to improve the seed germination of *S. nelsonii*.

S. nelsonii seeds were collected from Guam's single mature tree. The limited number of available seeds restricted the sample size of the experiment. Forty seeds were surface sterilized with 1% sodium hypochlorite (NaOCl) for 15 min and were rinsed three times with sterile water. Seeds were then divided into four groups with ten for each treatment. Seed treatments included hot water treatment, acid scarification treatment with concentrated sulfuric acid, and clipping, which were compared with the non-treated control.

For the hot water treatment, seeds were placed in boiling water for 3 min, then placed in sterile cold water. Acid scarification consisted of placing seeds in concentrated sulfuric acid for 4 min and then rinsing in sterile water three times. In the third treatment, a pair of pruning shears was used to clip an edge of the seed coat. Seeds of all treatments including the control were then soaked in water overnight for imbibition and were placed on a moist filter paper in petri dishes at room temperature (27°C). Seed germination was examined over a two-week period. A seed with a radicle of 3 mm in length was considered successfully germinated.

All seeds which were clipped germinated within one week from the date of application of treatments. In contrast, no seed germination was observed in the

other treatments and the control. It was observed that seeds with the sulfuric acid treatment swelled, suggesting that a longer treatment with sulfuric acid might improve seed germination. The present experiment has demonstrated that seed clipping can improve germination of *S. nelsonii*. At the end of the experiment, all seeds were clipped and seedlings were planted in the nursery as a part of the plant conservation program of this endangered species.

References

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