*Effects of Acid Scarification and Cold Stratification on Desmodium spp. Seed Germination Rates*

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Desmodium species may exhibit high N2-fixation rates in pine (Pinus sp.) forests, thereby potentially increasing soil fertility and site productivity. However, studies to assess the rates and controls of Desmodium N2-fixation have been hindered by the difficulty of germinating seeds collected from natural ecosystems. The objectives of this study were to assess the effects of acid scarification and cold stratification on the germination rates of seeds collected from Desmodium laevigatum, D. marilandicum, and D. viridiflorum. Seed pods for three species were collected from the Piedmont National Wildlife Refuge on October 11, 2019. The effects of seed type (clean, green hull, and brown hull), a 10 minute acid scarification treatment, and a 3 month -20oC cold stratification treatment were assessed in a complete factorial design. The clean, green hull, and brown hull seeds exhibited high germination rates for each species when scarified by acid. In contrast, the cold stratification treatment did not have a significant impact on seed germination rates for any of the species. These results indicate that both green and brown seed pods may be collected, that it is not essential to manually remove seeds from the indehiscent hulls, that it is beneficial to acid scarify the seeds, and that it is not necessary to cold stratify the seeds prior to planting or sowing in natural systems.