



After Invasion: Genetic and Phenotypic Variation of Remnant Natives in Greenhouse Production

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Genetic and phenotypic variation within native populations allows them to adjust to changing environments and novel disturbances, and thus provide enhanced restoration success. Little is known about the genetic and phenotypic responses of natives to weed invasions. Such characterizations may help us define optimum native grass genotypes for restoration. In order to determine how genetic and phenotypic variation within native grass populations are influenced by invasive weeds, we compare two generations of seed from maternal lines of *Sporobolus airoides* (Alkali sacaton) derived from within (IN) and outside (OUT) *Acroptilon repens* (Russian knapweed) invasions. Genetic variation of maternal lineages was documented using AFLP markers to examine impacts of invasives and greenhouse propagation on maternal lineages (from within and outside of invasions). Phenotypic variability in *S. airoides* seedlings was assessed by measuring leaf length, tiller number, plant height, inflorescence number, inflorescence height, basal diameter, and seed production. First generation seedlings (G1) from IN maternal lines grew larger than OUT seedlings. Seedlings from G1 populations were also larger than second generation (G2) seedlings. In both IN and OUT lineages, G1 seedlings produced more inflorescences than G2 seedlings. OUT maternal lineages were more phenotypically variable, possibly as a result of greater gene flow and higher genetic variation found within OUT populations. Selection of native plant populations via invasion may improve seed sources for restoration projects and native seed production by increasing native population resilience to invasive species.

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