

NO EVIDENCE OF LOCAL ADAPTATION IN SEEDLING RECRUITMENT OF A NATIVE PRAIRIE PLANT.

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Abstract: Restoration guidelines typically call for locally sourced seed, to reduce the likelihood of introducing maladapted genotypes and to avoid outcrossing depression. However, few empirical studies that measure the degree of local adaptation of native plants exist. To evaluate local adaptation in narrow-leaved purple coneflower (*Echinacea angustifolia*), a native perennial commonly used in prairie restorations, I collected seeds at three sites along a 500-km transect from northwestern South Dakota to west-central Minnesota. Collecting from locations at the same latitude allowed sampling of populations along a moisture gradient, while controlling for daylength and mean annual temperature. I reciprocally sowed the seeds into prairie restorations located near each source population. Seedling emergence was lowest in the western South Dakota plot and highest in the Minnesota plot for all three source populations, corresponding to expectations given the moisture gradient. Moreover, seedling emergence was higher for the western South Dakota and Minnesota seeds than for the central South Dakota seeds in all three experimental plots. These results are consistent with the common finding that maternal effects predominate over genetic effects in seedling germination or emergence. Survival to the end of the first growing season ranged from <50% at the central South Dakota plot to >80% in western South Dakota. Survival was highest for western South Dakota seedlings and lowest for Minnesota seedlings at all three experimental sites. There is no evidence for local adaptation at this early stage in the life cycle of *E. angustifolia*, though local adaptation may become evident at later life stages.