



## **Effects of Different Management Practices on Soil Seed Bank Composition in a Mixed-Grass Prairie of the Northern Great Plains**

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Evaluating soil seed bank is critical for understanding plant community development, successional patterns, restoration of disturbed areas and the areas dominated by invasive species. Our objectives were to determine the effects of prescribed burning, reseeding, and herbicide combined tillage managements on soil seed bank composition and compare the similarity between aboveground and belowground species composition. The study was conducted at the Oak Lake Field Station in eastern SD during 2005. Nine paired of 100m<sup>2</sup> macroplots were established in the areas of native prairie, restored rangeland through prescribed burning and reseeding, and herbicide combined tillage. One macroplot of each pair was randomly selected and burned in May with the other remained unburned. Within each macroplot, ten 0.25m<sup>2</sup> quadrats were randomly established. Cover by species was estimated for aboveground vegetation in early June and August. Three soil cores were extracted using a bulb planter in the same quadrats where vegetation samples were collected for seed bank determination. Non-reseeded areas had fewer total seeds than reseeded areas. Non-reseeded areas lacked native graminoid seeds and were dominated by introduced graminoid seeds. Burning reduced the percent of introduced graminoids to the seed bank and enhanced native forbs. There was a significant difference in species richness of seed bank between reseeded and non-reseeded areas regardless burning. Burning may decrease competitive capability of introduced species and promote the existing native species stands through vegetative reproduction, but may not influence the seed bank like reseeding. Species compositions in the established vegetation and seed bank were striking dissimilar.

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