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# Range Management and Soil Seed Bank: New Perspective

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## **RANGE MANAGEMENT AND SOIL SEED BANK: NEW PERSPECTIVE**

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### ABSTRACT

Seed banks are considered essential constituents of plant communities and contribute significantly to ecological processes. Seed banks play a critical role in managing the composition and structure of existing vegetation, restoring native vegetation, creating habitat for animals, preserving genetic diversity, and recovering endangered plant species. Therefore, implementation of management practices based only on existing aboveground vegetation, without the information of soil seed flora is obviously incomplete and dangerous. Our objectives were to determine effects of prescribed burning and reseeding managements on soil seed bank composition and the relationship between the soil seed bank and aboveground vegetation. The study was conducted at the Oak Lake Field Station in eastern SD during 2005. Seven pairs of 100 m<sup>2</sup> macroplots were established in the areas of native prairie and restored rangeland through prescribed burning and reseeding. One macroplot of each pair was randomly selected and burned in May with the other remaining unburned. Within each macroplot, ten 0.25 m<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. 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 aboveground and seed bank were strikingly dissimilar.