CONTRIBUTIONS OF SEED BANK AND VEGETATIVE PROPAGULES TO VEGETATION COMPOSITION ON PRAIRIE DOG COLONIES IN WESTERN SOUTH DAKOTA

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ABSTRACT

Characterizing the contributions of the seed bank and vegetative propagules will enhance our understanding of community resiliency associated with prairie dog disturbances. Our objective was to determine the effects of ecological condition (EC) and distance from burrows on the soil seed bank and vegetative propagules. Two active burrows were randomly selected on each of 2 prairie dog colonies (Low EC vs High EC). Two soil cores were taken at 0.5 m, 1.0 m, and 1.5 m distances from the center of each burrow on 3 transects. Cores used to evaluate the seed bank were sifted and spread within standard seed flats, while cores used to determine vegetative propagules were placed intact into plastic pots. Both were maintained in a greenhouse for daily monitoring. A total 446 seedlings representing 16 species emerged from the Low EC seed flats, while 549 seedlings comprising 26 species emerged from the High EC seed flats. Sixty-three percent of the Low EC and 58% of the High EC species emerged from the seed flats were annuals. On the Low EC colony, 43 plants/tillers were generated from vegetative propagules representing 7 species, three of which were also found in the seed flats. On the High EC colony, 431 plants/tillers sprouted from vegetative propagules representing 5 species that were not present in the seed flats. Four of the 5 species that emerged from vegetative propagules on High EC were perennial native grasses, and only one of the 7 species that emerged from vegetative propagules on the Low EC was a perennial native grass. Distance from burrows had no impact on species richness within each EC. Both colonies demonstrated considerable revegetation potential but differed with respect to relative contributions from the soil seed bank and vegetative propagules.