

Effects of Fire on Forb Germination and Survival in a South-Central Kansas Tallgrass Prairie

Jennifer Smith

Fairmount College of Liberal Arts & Sciences

Abstract: Prescribed burning is an important tool for the conservation, restoration, and management of prairies, but, how fire impacts seeds in the year of the fire is poorly understood. For example, prairie burns can result in litter removal and increased nutrient availability, however it is unclear whether fire causes high seed mortality, or if such losses are offset by increased germination or establishment. In this study, we examined whether prescribed burning has facilitative or suppressive effects on the germination and survivorship of forbs in a south-central Kansas tallgrass prairie. Seven experimental treatments, which manipulated litter removal, burning of the seeds (lab and field), and burning of the prairie, were applied to 0.5 x 0.5-m plots to examine the effects on 15 species of common Kansas forbs. After one growing season, cumulative germination and end-of-season survivorship strongly increased in plots that were burned or had litter removed, though the effects were lower when seeds were sown prior to the burn. These results suggest that in similar tallgrass prairies, prescribed burns have a net positive effect on forb colonization and that sowing native forbs following a prescribed burn may be an effective restoration technique.