



Effects of 10 Years of Fire and Climate Variability on Perennial Grass Cover in Shortgrass Steppe of the Southern Great Plains

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The objective of this study is to examine the effects of 10 years of fire and climate variability on perennial grass cover in shortgrass steppe. The research is part of a long-term, 18-year study examining effects of fire in the growing vs. dormant season at return intervals of 3, 6 and 9 years. In general, the response of grasslands to fire seems to depend primarily on pre- and post-fire levels of precipitation. The southwestern United States has experienced drought 9 of the past 10 years, with an extreme drought occurring in 2002. Percent grass cover from dormant-season fire and unburned treatments and total annual precipitation (mm) were plotted over 5 sample periods. There appeared to be a direct positive relationship between perennial grass cover and precipitation, and precipitation appeared to override fire effects. Though the 30-year mean annual precipitation (MAP) for the site was 356 mm, most actual total annual precipitation for the site over the 10-year period was generally lower than MAP, and in some cases as much as 50 percent lower. For management purposes, the frequency and severity of drought are more important than long-term average climate conditions. Too often land managers plan for average climate conditions, rather than the climatic extremes that can be expected. Since this and other studies have indicated weather patterns can supersede fire effects in shortgrass steppe, the use of fire as a management tool in a drought year should be carefully considered and aligned with management goals.

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