Effects of Prescribed Burning on Grazed Shortgrass Steppe

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Over the past century, fire has been widely suppressed in the western Great Plains, in part due to potential negative effects on forage production for livestock. Interest in the use of prescribed fire in shortgrass steppe has increased recently due to applications for wildlife management, control of unpalatable plant species and restoration of historic disturbance regimes. We studied the effects of prescribed burns conducted during late winter on shortgrass steppe on the Pawnee National Grassland in northeastern Colorado. Late-winter burns conducted in moderately grazed sites under a wide range of precipitation conditions during 1997 - 2001 did not negatively affect plant production either in the first or second post-burn growing season. Burns suppressed the abundance of broom snakeweed (*Gutierrezia sarothrae*) and prickly pear cactus (*Opuntia polyacantha*) during the first post-burn growing season, and enhanced forage nitrogen content during May and June. Burning followed by a severe drought in 2002 reduced production by 19% in the second post-burn growing season of 2003. In 2007, we examined effects of prescribed burning on soil moisture, soil N availability, herbaceous plant production, and in vitro digestibility of blue grama (*Bouteloua gracilis*) during the first post-burn growing season. Burning had no effect on soil moisture, increased soil N availability, increased digestibility of blue grama, and had no effect on plant production. Our findings suggest that except during severe drought, prescribed burns conducted during the dormant season in shortgrass steppe can have neutral or positive consequences for livestock.

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