FIRST-YEAR RESPONSE TO SUMMER FIRE AND POST-FIRE GRAZING EFFECTS IN NORTHERN MIXED PRAIRIE

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ABSTRACT

Summer wildfire is a common occurrence in the northern mixed prairie. Two-year deferment from grazing is generally recommended following wildfire. However, little research has been conducted to determine whether deferment is necessary for vegetative recovery. Research objectives were to determine if summer fire and post-fire grazing at different utilization levels would affect standing crop, current-year biomass, and species composition. Five treatments were applied to twenty 0.75-ha plots near Miles City, Montana, with four replications of each treatment. Treatments were no burn + no graze, burn + 0% utilization, burn + 17% utilization, burn + 34% utilization, and burn + 50% utilization. Fire was applied 29 August 2003, and grazing treatments were applied late June through early July 2004. Current-year biomass was similar between burned and unburned plots for herbaceous components. Total standing crop and current-year biomass were each similar among utilization levels. Fire decreased threadleaf sedge (*Carex filifolia*) and needle-and-thread (*Heterostipa comata*) by 106 and 136 kg ha^{-1}, respectively. Annual bromes (*Bromus* spp.) and fringed sage (*Artemisia frigida*) were minor components, but were reduced by fire as well. Western wheatgrass (*Pascopyrum smithii*), other cool-season perennial grasses, and forbs were unaffected by fire. Warm-season perennial grasses, predominantly blue grama (*Bouteloua gracilis*), were reduced 156 kg ha^{-1} by fire and decreased linearly with increasing utilization. Early results indicate that summer fire and grazing may alter species composition but do not reduce current-year biomass across species during a drought year.

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