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OPTIMAL TIMING OF PRESCRIBED BURNS BASED ON SMOOTH BROME DEVELOPMENT

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ABSTRACT

Bromus inermis is a cool-season, introduced grass which has been planted or has invaded prairies. Together with *Poa pratensis*, these species out-compete native warm season grasses and forbs. Control techniques include prescribed burning which may vary in its effectiveness depending on the stage of brome development at the time of burning. The objectives were to evaluate the influence of burn timing on (1) density and biomass of *B. inermis*, *P. pratensis*, native grass and native forb species and total richness and (2) completeness of burns at different brome stages. Four plots each (6m x 6m) were delineated to receive no burning (control), burning at *B. inermis* tiller emergence, tiller elongation and heading stage. Burn completeness was evaluated visually following each treatment. Plants were counted and clipped in October from ten 0.1 m² quadrats randomly placed into each plot. Burn completeness decreased from 83% to 35% as *B. inermis* matured through the heading stage ($P < 0.01$). Biomass of *P. pratensis* decreased in plots burned during the heading stage relative to controls ($P < 0.01$) but not to earlier stages. No differences in brome density or biomass were observed among dates. Total biomass was lower from plots burned at the heading stage relative to other stages. Native grass biomass, forb density and biomass and total species richness did not vary significantly among burn dates. Burning in mid-summer reduced *P. pratensis* biomass which could reduce competition with native species. Later burns would not be effective due to the abundance of tall, green vegetation.