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## BELOWGROUND BUD BANK OF SMOOTH BROME IN RESPONSE TO MOWING TREATMENTS

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### ABSTRACT

A serious problem facing land managers of many prairie remnant of the northern Great Plains is the invasion and persistence of introduced cool-season perennial grasses, such as smooth brome (*Bromus inermis*). This species is highly competitive and spreads through prolific seed and bud (i.e. rhizome) production. Since aboveground perennial grass population dynamics is strongly driven by vegetative reproduction via belowground bud banks, we evaluated the persistence of bud banks of smooth brome in response to mowing treatments. The experiment was a complete random block design with 3 mowing treatments including mowing once, twice, and three times after the last elongated node reached mowing height plus control. Each treatment had 4 replications. Tiller density of smooth brome within two 0.1 m<sup>2</sup> subplots was recorded every 3-weeks after each treatment. Three tillers were randomly selected from each treatment plot and excavated to determine the number of crown positions and buds and their viability. Compared to control, all mowing treatments did not ( $P = 0.065$ ) reduce the number of crown positions per tiller at the end of the growing season, but significantly reduced the total number of buds per tiller by 43 to 66%, bud density (# buds m<sup>-2</sup>) by 65 to 88%, and tiller density by 40 to 65% as the mowing frequency increased. In contrast to control, all mowing treatments increased percent of active buds and decreased percent of dormant buds. These results suggest that mowing at the optimal growth stage can effectively hinder bud formation and tiller recruitment and reduce existing bud banks.