

## **INCREASING SEED DENSITY IN RESTORATION PLANTING: GREATER RICHNESS OR MORE OF THE SAME?**

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*Abstract:* The high richness of grasslands has been elusive in many grassland restorations. Theory predicts that richness should increase immediately after disturbance, and peak at a level that maximizes disturbance tolerant and disturbance intolerant species. We created plots with differential seed dispersal to determine whether small-scale species richness is dependent of the rate of dispersal. Twenty mesic prairie species were used with seed densities ranging from 15 to 480 seeds per m<sup>2</sup>. *Elymus canadensis* was included at 1 oz. per plot in every treatment to provide grass establishment. Abundance (number of shoots) of each species was recorded from four 0.25m<sup>2</sup> samples in each plot. Entire plots were searched for all planted species. Unseeded controls exerted dramatic influence on correlation results, often being outliers, and were removed from analysis. Twelve of the 20 planted species were found. As seed density increased, both the number of individuals and total species richness per 0.25m<sup>2</sup> quadrat increased. Increased seed density did not increase species richness at the plot (5m x 5m) scale. There was a significant negative correlation between planted species abundance and adventive species abundance, but most adventives were eliminated at low densities, with higher densities being similar. The fact that nearly half of the species sown did not establish demonstrates that increasing seeding rates does not translate into more establishment. Other factors such as timing of seeding or specific weather conditions may be more important than providing more seeds. Recruitment of some species may occur only infrequently when conditions are optimal.