SEED BANK COMPOSITION AND ECOLOGY IN A DISTURBED FLOODPLAIN GRASSLAND

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Abstract: The seed bank composition and ecology of a reconstructed prairie in a floodplain environment at Chichaqua Bottoms Greenbelt in Polk County was examined with a seedling assay method in 2009 to 2010. Three environmental factors were incorporated into the design: 1) local site factors such as hydrology and extant plant community, 2) impact of cattle grazing, and 3) depth in the soil. The study site was severely impacted by flooding in 2008, creating a major disturbance and an early successional environment. Soil cores were collected in September 2009 from three blocks along a hydrological gradient, each block contained a pair of study plots (one grazed and one non-grazed). The soil cores were divided into two depths - 0 to 3 cm and 3 to 6 cm (6 cm total depth). The soil was stratified before the seedling assay was initiated on December 16. Three replicate trays, each with approximately 500 cm^3 of seed bank soil, were used for each combination of site-grazing-depth (12 "treatments"). Seedlings were identified, removed and counted for 5 months. The total number of seeds observed was 3,223, which represents 46 different plant species. Species with the highest densities in the seed bank include *Veronica peregrina*, *Rorippa sessiliflora*, *Eupatorium serotinum*, *Ammannia coccinea*, *Setaria faberi* and *Echinochloa muricata*. Statistical analysis with Three-way ANOVA indicates that several species exhibit significantly different seed densities due to the factors of local site, grazing, and soil depth. The effects on seed abundance of these factors and many of the interactions among these factors will be presented.