

USE OF SOIL DISTURBANCE AND RE-SEEDING TO INCREASE PRAIRIE PLANT SPECIES RICHNESS IN A POST-AGRICULTURAL FIELD IN SOUTHWEST OHIO

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Abstract: Prairie restoration efforts in a 14-hectare post-agricultural field, now a groundwater well field began in 1999 after a fallow period of 9 years during which time succession had produced a dominance of perennials, chiefly *Solidago altissima*. We introduced prairie plant species by no-till sowing without the benefit of herbicides to suppress post-agricultural weeds. Controlled burns in the spring of odd years, 1999-2005, favored *Sorghastrum nutans* and enhanced the residual population of *S. altissima*, both combining to suppress establishment of prairie forbs. We hypothesized that moderate soil chisel plowing would reduce cover of dominant species and favor establishment of forbs. In Spring 2005, we established paired 0.40-ha plots; 3 chiseled and re-seeded (“disturbed”) and 3 “control” plots. A late-summer, quadrat sampling revealed a combined reduction in cover of *S. nutans*, *S. altissima*, and *Poa pratensis* of 42% which was matched by a 43% increase in cover by annuals, *Ambrosia artemisiifolia* and *Setaria faberii*. Disturbance had little effect on richness of native species (17 to 15). By 2007, the dominant perennial species had regained cover comparable to “control” levels while the two annual species had diminished by 44%. Meanwhile, percent cover of prairie forbs had increased in “disturbed” plots from 3.5% to 11.5% with little increase in “controls.” Native species richness increased in “controls” (17 to 25) and more than doubled in “disturbed” plots (15 to 34) suggesting that our disturbance/re-seeding treatment had acted over and above the effects of elapsed time at this early phase of restoration.