Seed Enhancement Technologies for Native Plant Restoration on Reclaimed Mine Lands[1]

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Abstract: Revegetation of reclaimed mines presents many challenges, particularly in arid environments where invasive annual grasses are pervasive. In the semi-arid West, cheatgrass (*Bromus tectorum*) often invades habitats after disturbance making it particularly difficult for sagebrush, a slow growing woody shrub, to reestablish. To improve revegetation outcomes we are testing a seed enhancement technology that allows you to seed and spray herbicide at the same time. This is achieved by encasing seeds in a pod containing activated carbon, which adsorbs herbicide. The aim of the technology is to give desirable, native species a chance to establish with reduced competitive pressure from invasive species. In lab trials, herbicide protected pods have been shown to enhance the emergence of native grasses relative to bare seeds after spraying the soil surface with herbicide. We are now testing the technology for its potential to augment native plant cover on reclaimed uranium mines in central Wyoming. In fall 2018, we set up a field trial at three mine sites on both a wet and dry slope to test whether herbicide protection pods with Indian ricegrass (*Achnatherum hymenoides*) and Wyoming big sagebrush (*Artemisia tridentata* spp. *wyomingensis*) will improve emergence in the field compared to bare seed. We will present preliminary results from this field experiment and discuss the potential for seed enhancement technologies to improve restoration in the sagebrush ecosystem.

Additional Keywords: Restoration, Abandoned Mine Lands, Revegetation,

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