Evaluating the Effectiveness of a Hydrogel/Fertilizer Matrix to Improve Seed Germination

Sylvester, Dante

This research began over four years ago. During the summer of 2012 numerous bare patches were noticed in the hills in the Greybull area that were mined before reclamation was mandatory. The problem that was being investigated was getting sagebrush and various other commonly used plants like Wyoming Big Sage, Rubber Rabbit Brush, and Gardener Salt Bush to germinate and survive better when used for reclamation. The testing method determined if there is an impact on germination rates if a hydrogel/fertilizer matrix is added to the soil. This research encompassed varies different fertilizers that included liquid fertilizer, bead fertilizer, biochar, water, and a control with no added hydrogel. The hydrogel had a ten day period to swell to their maximum volume. There was a very noticeable size difference between the four swelled hydrogels. The hydrogels that were soaked were then placed in the test plot of soil about a half inch deep. The results proved that there was a drastic difference in germination rates between the hydrogels fertilizer combinations and the control. The results showed that the water hydrogel combination germinated the most sagebrush and did the best in every test. The application of this technique can be wide-spread through the mining and reclamation fields across the United States and even to the other parts of the world.

Awards Won: