INFLUENCE OF TOPSOIL DEPTH ON VEGETATION ESTABLISHMENT FOLLOWING MINE LAND RECLAMATION[1]

Joshua Voss[2], Steven R. Perkins, Bruce A. Buchanan and C. Kent Applegate

Abstract: In 1993, a wedge plot study was initiated at Navajo Mine near Kirtland, NM. The objective of the study was to ascertain the influence of topsoil depth over spoil on vegetation establishment. Ten wedge plots were constructed with topsoil depths in each plot ranging from 0 to 24 inches. The wedge plots were seeded in May 1993 and irrigated for the first growing season. In August 2008, annual species cover data and perennial species cover and density data were collected from the plots. Data were analyzed using a Kruskal-Wallis test to determine differences in species cover and density among topsoil depths of 0 to 4 inches, 4 to 8 inches, 8 to 12 inches, 12 to 16 inches, 16 to 20 inches, and 20 to 24 inches. The most common species included galleta grass (*Pleuraphis jamesii*), alkali sacaton (*Sporobolus airoides*), Russian thistle (*Salsola tragus*), and fourwing saltbush (*Atriplex canescens*). Fourwing saltbush was the only species significantly ($p<0.05$) influenced by topsoil depth, and both cover and density of fourwing saltbush were greater on shallow topsoil than deep topsoil. Total cover of perennial grass species was also significantly ($p<0.05$) influenced by topsoil depth, and grass cover was greater on deep topsoil than shallow topsoil. The results indicate that topsoil depth can influence species composition and that variation in topsoil depth may be a management tool to increase species diversity.

Additional Key Words: mineland reclamation, plant establishment, arid environment, topsoil depth

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[2] Joshua Voss, Reclamation Scientist, Buchanan Consultants, Ltd., Farmington, NM 87499, Steven R. Perkins, Environmental Specialist, BHP Billiton – New Mexico Coal, Fruitland, NM 87416, Bruce A. Buchanan, President, Buchanan Consultants, Ltd., Farmington, NM 87499, C. Kent Applegate, Environmental Coordinator, BHP Navajo Coal company, Farmington, NM 87402.