

COAL REFUSE RECLAMATION: EFFECTS OF TOPSOIL THICKNESS ON THE GROWTH AND MAINTENANCE OF VEGETATION

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by

Ronald L. Kolbash, PHD ²

John R. Freeman

Thomas L. Romanoski

John W. Sturm

Abstract. The four feet topsoil requirement for coal refuse piles may be reduced if revegetation requirements can be met with less soil cover. A 1.2 acre demonstration project was initiated on a large coal refuse pile in north central West Virginia to evaluate the effects of topsoil thickness on the growth and maintenance of vegetation. Five 80 x 100 - foot plots were covered with four, three, two, one and zero feet of topsoil from an adjacent borrow area. Refuse and soil samples were collected at various depths before construction and in the third and fourth years of the project. Refuse samples were analyzed for acid-base account and soil samples were analyzed for cation exchange capacity and base saturation. All samples were analyzed for plant nutrients, moisture holding capacity and texture. The plots were limed, fertilized and seeded with a grass-legume mixture. Vegetation samples were collected in the third and fourth years. Four transect lines were established across each plot and two 2 x 2 -foot quadrats were placed on each transect. Vegetation within each quadrat was clipped at ground level, air dried and dry weights were determined. Repeated measure analysis of variance to determine significant differences among topsoil treatments showed no significant difference between the four, three and two feet treatments in Year Three and no significant difference between the four, three, two and one feet treatments in Year Four. Soil profiles were described and sampled in Year Four to evaluate root penetration. Roots penetrated to the soil-refuse interface in all soil thicknesses.

Additional Key Words: Coal, coal refuse, topsoil, revegetation, minesoil



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² Ronald L. Kolbash is Administrative Assistant-Governmental Affairs and Thomas L. Romanoski is Environmental Engineer-Planning and Engineering, American Electric Power, Fuel Supply Department, Lancaster, OH 43130. John W. Sturm is President and John R. Freeman is Vice President of Sturm Environmental Services, Inc., Bridgeport, WV 26330

