Retardation of Pyrite Oxidation by Massive Fly Ash Application to Mine Spoils. D. K. Bhumbla, R. N. Singh, and R. F. Keefer, West Virginia University.

Field experiments were conducted to investigate the effect of massive application of fly ash with respect to retardation of pyrite oxidation and revegetation of pyritic mine spoil. Treatments consisted of 600 and 1200 Mg ha^{-1} for each of three fly ash sources-- Albright, Fort Martin, and Harrison-- and a control of ground agricultural limestone placed in a randomized complete block design with four replications. The fly ashes varied in chemical composition and acid neutralization capacity (high for Fort Martin and Harrison fly ashes, but low for Albright fly ash). All plots received complete fertilizer and hay (to supply organic matter) which were disced in prior to seeding with a grass-legume mixture. A hay mulch was blown onto the surface of the whole area. Growth and chemical composition of vegetation were monitored. Crop growth and composition were related to composition and chemical changes of the growth media due to pyrite oxidation. The best crop establishment and growth during the first growing season were on plots receiving Albright fly ash in spite of no alkaline recharge to the subsurface spoil. However, application of this ash was not sufficient to significantly retard pyrite oxidation at the lower depths and resulted in decline in vegetative growth during the second year. Soil analyses with depth showed that alkaline recharge from Fort Martin and Harrison fly ashes was responsible for increases in subsurface spoil pH and retardation of pyrite oxidation.

ADDITIONAL KEY WORDS: Reclamation, Revegetation, Industrial Wastes, Industrial By-Products, Soluble Salts.