Effects of Parent Material on Soil Properties and Land Use in Selected Kansas Mine Soils. (S05-gastineau215401-Oral)

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Abstract:

Pedogenesis and properties of reclaimed soils in Crawford County, Kansas are investigated. Soils were either smoothed with tracked equipment (Coalvale and Filler, 1970's) or layered with rubber-tired equipment (Brazilton, 1980's). Vigorus plant communities are found at 4 of the 6 study sites. Roots at 100-cm depth in Coalvale are present in quantities often exceeding those found in native soils. Bulk density ranges from 0.74 to 1.27 Mg/m3 in surface horizons of Coalvale and Filler and 1.39 to 1.46 Mg/m3 in Brazilton, with these values increasing with depth in all pedons (e.g., 2.85 Mg/m3 at 2-m depth in Brazilton). Soil pH ranges from 3.4 to 7.9 and correlates to the remnants of geologic layers near the surface after reclamation. Clay layer (C1) in Brazilton is root and water restrictive, limiting production potential and causing ponding in depressional areas. Fragments and parafragments are contributing to available water and facilitate air and water movement. Soil development appears to be greater in Coalvale and Filler than in Brazilton and greater in reclaimed soils than in native soils, suggesting type and age of reclamation are major factors in this development.

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