EFFECT OF RECLAMATION GRADING PRACTICES ON GROUND COVER ESTABLISHMENT, EROSION, AND FOREST PRODUCTIVITY

by

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Abstract: In 1991 a study was established in eastern Kentucky to evaluate the effect of surface grading intensity on ground cover development, erosion, and tree growth. The study consisted of three grading treatments: The "moderately graded" treatment consisted of backfilling a 40% slope with a bulldozer to create a smooth slope. The "intensively" graded treatment involved an additional grading pass with Caterpillar D-9 bulldozers and a "tracking-in" operation. The "roughly graded" treatment was ripped directly up the slope with a D-9 bulldozer pulling a 36" subsoiler. Each treatment was replicated three times with 150-ft X 150-ft plots. The entire study area was hydroseeded with a tree-compatible ground cover and five species of trees were planted in each plot (eastern white pine, loblolly pine, yellow-poplar, sweetgum, and sycamore). Erosion was monitored during the first two years with a set of 50 measurement rods installed in each plot. Ground cover was quantified along transects after the first two growing seasons, and trees were measured. The least amount of erosion and the best tree growth occurred on the ripped plots. Compaction on the intensively graded treatment greatly reduced tree growth compared to the rough graded treatment. This study shows that intensive grading practices which are commonly employed in the Central Appalachian coal fields to improve ground cover establishment and control erosion, can actually increase erosion and hinder forest productivity.

Key words: reclamation, erosion, forest productivity.

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