

SOIL PROPERTIES AND HARDWOOD GROWTH AFTER ONE YEAR ON BROWN AND GRAY SANDSTONE SOILS¹

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Abstract. The forestry reclamation approach has become a widely accepted practice in the Appalachians for post mining land use. This approach requires the placement of 1.2 m of uncompacted weathered brown sandstone and pre mining top soil or best possible available substitute, typically unweathered gray sandstone. To demonstrate the effectiveness of the treatments as a growth media, eight 0.8-ha plots were constructed; two brown sandstone, two gray sandstone, and four mixed. Plots were planted with a mix of commercially valuable hardwood species. First year tree growth was recorded for approximately 10% of the planted trees. Soil samples from 0 to 6 inches and 6 to 12 inches below the soil surface were collected and analyzed for % fines, % rocks, pH, EC, P, K, Ca, Mg, Fe, Al, and Mn. Overall, gray sandstone plots had a lower % fines to rock ratio compared to brown sandstone and mixed plots. The average pH for brown sandstone was 7.43, while gray plots averaged 7.15 and mixed were 6.8. Tree volume (diameter² x height) was calculated for the first year. Black locust (*Robinia pseudoacacia* L.), black cherry (*Prunus serotina* Ehrh.) and white ash (*Fraxinus americana* L.) appear to grow the best in all treatments with average volumes of 70, 46, and 46 cm³, respectively, followed by the Oaks (*Quercus rubra* L. *Q. prinus* L. and *Q. alba* L.) with an average volume of 29 cm³, respectively Sugar maple (*Acer saccharum* Marsh.) and white pine (*Pinus strobes* L.) have the least volume in all treatments compared to other species with average volume%, s of 13 and 15 cm³, respectively. Overall survival rates for brown, gray and mixed sandstone were 100%, 80% and 87%, respectively.

Additional Keywords: Forestry Reclamation Approach, minesoils, tree seedlings,

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