

SWITCHGRASS PRODUCTION POTENTIAL ON RECLAIMED SURFACE MINES IN WEST VIRGINIA¹

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Abstract: The high cost of petroleum based transportation fuels has caused an increased interest in the development of renewable biofuels to supplement our energy needs. One energy crop that is well suited for conversion to biofuels is switchgrass because of its high biomass production on marginal lands with moderate fertility needs. West Virginia has the potential to become a center of biofuel production with its large expanses of reclaimed mine lands that are central to the U.S. energy market. Switchgrass production on surface mine land offers the unique opportunity to increase the land resources devoted to energy crops without decreasing the land resources devoted to food and livestock feed production. Our intention with this study is to identify the best varieties of switchgrass for mined lands in West Virginia, their planting and management requirements, yields, biofuel feedstock potential, capacity for carbon capture and sequestration and other revenue streams. Two sites in the southern and one in the northern part of the state were selected for this experiment. Three varieties of switchgrass were randomly assigned and planted into 0.4 ha plots, which were replicated three times for a total of nine plots at each site. Planting was conducted in May of 2008. The varieties of Carthage, Cave-in-Rock and Shawnee were chosen for their favorable growing characteristics and adaptation to West Virginia's climate. All three sites are reclaimed surface mines and have had topsoil rolled out above the overburden material. The Coal-Mac mine site in Logan County was prepared with a disk harrow and then hydroseeded with seed and mulch. The Hobet 21 mine site in Boone County was prepared with a disk harrow and then hand broadcast with a spinner spreader and then hydromulched. The Hampshire Hill site in Mineral County had been amended previously with bio solids from a municipal waste treatment facility, and the soil was disked, harrowed and then switchgrass was broadcasted by hand with a spinner spreader, and not hydromulched. Switchgrass seed of each variety was planted at a rate of 9 to 11 kg pure live seed per plot at all sites. Germination success, percent cover, mine soil characteristics and biomass yield will be discussed.

Additional Keywords: switchgrass, biomass production, carbon sequestration.

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