

ESTABLISHMENT AND GROWTH OF SWITCHGRASS AND OTHER BIOMASS CROPS ON SURFACE MINES¹

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Abstract: Biomass crops are being grown on agricultural and marginal lands to provide feedstock for co-firing in power plants and conversion to transportation fuels. Switchgrass (*Panicum virgatum* L.), Miscanthus (*Miscanthus x giganteus*), and giant cane (*Arundo donax* L.) are three biofuel feedstocks that have been planted on reclaimed surface mined land to determine their establishment and potential for biomass production. This study documents the establishment and dry matter (DM) yield of these biomass crops on several mined sites in West Virginia and Ohio. The Alton site has all three species planted and DM yield after the fourth growing season averaged 5,200 kg ha⁻¹ for switchgrass (Kanlow and Bomaster varieties) and 9,000 kg ha⁻¹ for two varieties of Miscanthus. Giant cane had less than 1,000 kg ha⁻¹. Cave-In-Rock switchgrass was planted on 8 ha at the MeadWestvaco (MWV), WV, site and at The Wilds, OH, site in 2013. After the first growing season, switchgrass production was 752 kg ha⁻¹ at MWV and 1,045 kg ha⁻¹ at The Wilds site. Miscanthus was also planted on these two latter sites and biomass production after one year was 200 and 600 kg ha⁻¹, respectively. These biomass averages at The Wilds and MWV were lower than averages produced at Alton after the first growing season. At the Coal Mac site, an average of 10,000 kg ha⁻¹ of *Arundo* was produced after the third growing season. As demonstrated in these and other studies, two to three years are required for these bioenergy plants to establish and expand to produce suitable amounts of biomass.

¹ Paper will be presented at the 2014 National Association of Abandoned Mine Land Program (NAAML), Columbus, OH, Sept. 21-24, 2014.

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