

USING FERTILIZATION, IRRIGATION, AND HARVEST STRATEGIES TO
MAXIMIZE 'ALAMO' AND 'CAVE-IN-ROCK' SWITCHGRASS BIOMASS YIELD
IN THE SOUTHERN OZARKS

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Abstract

Switchgrass (*Panicum virgatum* L.) is recognized as a model perennial bioenergy feedstock for marginal land where water and nutrient availability prevent the production of conventional row crops. Switchgrass may offer a source of income for producers on these lands in the southern Ozarks, either as forage for livestock or biofuel feedstock. However, information is lacking on the management of switchgrass for these purposes in this region. The objective of this study is to evaluate the effects of harvest frequency, fertility sources, and irrigation management on yield and forage quality of 'Alamo' and 'Cave-in-Rock'. Switchgrass cultivars were established in 40ft x 40ft plots in a randomized complete block with three replications on a Leadvale silt loam in March 2007. Fertility treatments included an annual 2 ton/acre application of poultry litter and nutrient-equivalent commercial fertilizer. Irrigation treatments included no irrigation and 2 inches per week of supplemental irrigation. Half of each plot was harvested twice per year in June and December; the remaining half was harvested once in December. Percent crude protein (CP), acid detergent fiber and neutral detergent fiber were determined for the June harvests. The greatest yields generally occurred for Alamo harvested twice/year, irrigated, and fertilized with either poultry litter or commercial fertilizer. Dry matter yields ranged from 6.5 to 13.7 ton/acre. Forage quality estimates were similar across treatments with Cave-in-Rock providing a slight increase in CP over Alamo. Irrigation provided minimal benefits, which may indicate switchgrass can be productive under climatic condition and rainfall as a low input feedstock for forage and biofuel in the southern Ozarks.

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