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# Management of Switchgrass for the Production Of Biofuel

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Abstract

Switchgrass (*Panicum virgatum* L.) is a warm-season perennial being considered as a biofuel to meet energy challenges. In Massachusetts, a small state where the price of land is expensive, farmers want to determine if switchgrass can produce sufficient yields for consecutive years to warrant its production. The objective of this study was to determine what harvest management practices affect the vigor and health of switchgrass and which varieties produce the best yields for biofuel production.

Four experiments were conducted from 2009-2012. Twelve varieties were tested to determine their viability in the Massachusetts climate. Five were chosen for further chemical analysis. All varieties were harvested in August (senescence), November (killing frost), and April (early spring). A high yielding variety, Cave-in-Rock, known to grow well in northern latitudes, was chosen for more extensive research. In one experiment, a young stand, three years old, received three nitrogen treatments, was cut at two heights, and was harvested at three different times during the year. A mature stand, seven years old, of the same variety located on conservation land, was harvested three times at two cutting heights. These experiments were done to provide projections on the expected yields over the plant's 10 to 20 year life cycle. In our final experiment

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Switchgrass was harvested every two weeks from September to November. A calimeter tracked how much energy was present in the dry matter throughout the growing season. Dry matter yield, chemical constituents, and carbohydrate reserves in the below ground tissues were measured as indicator variables to determine the health and quality of yield. Harvest time was the most significant variable observed.

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