

# **In-Field Weathering Influences Harvestable Biomass and Biofuel Quality of Switchgrass Cultivars**

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Energy derived from direct combustion of biomass requires feedstocks low in nutrients, ash, and moisture concentrations. In-field weathering offers a practical management strategy for improving biofuel quality of the feedstock; however, prolonged weathering may decrease harvestable biomass. The objective of our study is to evaluate biomass yield and biofuel quality of 'Alamo' and 'Kanlow' switchgrass as influenced by in-field weathering in the Texas Rolling Red Plains. Replicated plots of Alamo and Kanlow were harvested for biomass at 50% seed maturity, then every 6 weeks for approximately 24 weeks (5 total harvests) during 2008-2010. Samples collected from each harvest were used to determine nutrient analyses (N, K, Ca, S), total ash, and moisture concentrations. Weathering did not significantly reduce biomass of Alamo and Kanlow during the 2008-2009 compared to the initial harvest. Conversely, biomass was significantly reduced in 2009-2010 harvests. Effects of precipitation (rain, sleet, and snowfall) received during late fall, winter, and early spring contributed to reduction in biomass. Nutrients, total ash, and moisture concentrations decreased in all grasses after initial harvest. Preliminary results indicate in-field weathering reduces nutrients, total ash, and moisture concentrations of Alamo and Kanlow switchgrass grown for biomass in the Rolling Red Plains to acceptable levels approximately 12-18 weeks after seed maturity. Biomass loss is influenced by the amount and type of precipitation received during the weathering period.

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