

Approximately 15% of Miscanthus Yield is Lost at Current Commercial Cutting Heights in Iowa

Background/Objective

- The perennial grass *Miscanthus x giganteus* (*Mxg*) is a promising feedstock for biofuels and bioproducts.
- As a crop with a developing commercial market, the ability to accurately predict harvestable yield will be important.
- While other studies have explored the impact of environmental and management factors on *Mxg* biological yield, the impact of cutting height on harvested yield has remained uncharacterized. This work aims to fill this knowledge gap.

Approach

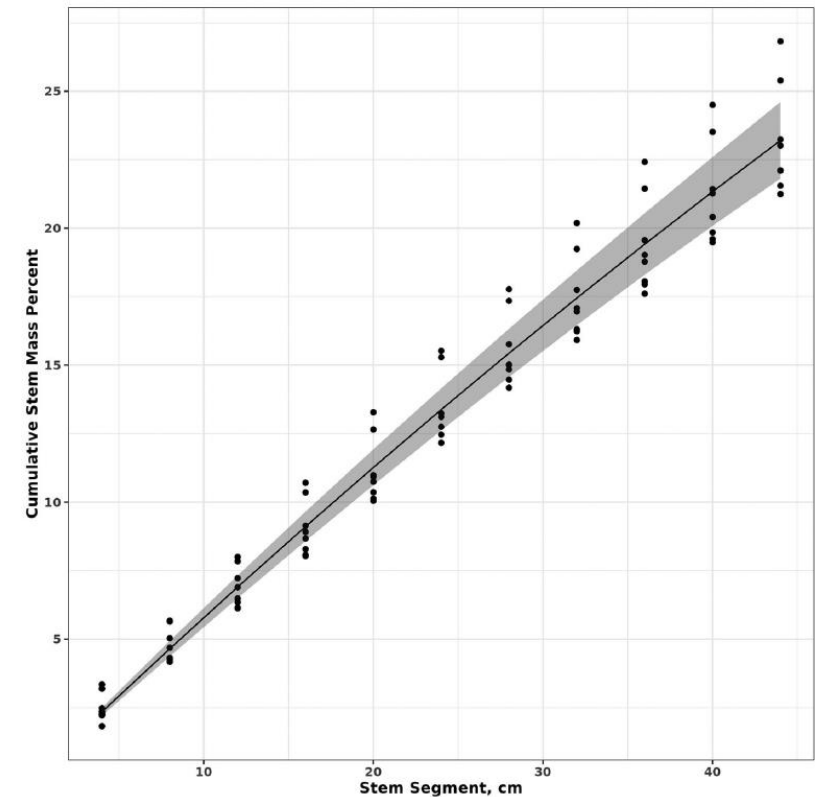
This study measured the linear stem density (g cm^{-1} stem length) in the bottom 44 cm of *Mxg* stems in a replicated nitrogen (N) trial of a 5-year-old *Mxg* stand in southeast IA. Cutting height observations in nearby commercial *Mxg* fields were then used to estimate the fraction of stem mass remaining in the field.

Results

N fertilizer did not significantly change the relative linear stem density. Overall, each centimeter of stem within the bottom 44 cm contributed 0.5% of the total stem biomass. Therefore, the typical commercial cutting height of 30 cm leads to an average harvest loss of 15% of aboveground standing biomass.

Significance/Impacts

This work demonstrates that cutting height is an important factor in accurately predicting commercial *Mxg* harvest yields and *Mxg* aboveground contributions to soil organic carbon.



Cumulative mass percentage for 4cm segments of *Mxg* stems. The leftmost point represents the segment 0-4 cm from ground level. Grey shading indicates 95% confidence interval.

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