

Yield & Fiber Components of Alfalfa Lines Ranging in Stem Fiber Digestibility

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Alfalfa (*Medicago sativa* L.) stems disproportionately impact forage yield and nutritive value because they make up a greater proportion of the total forage mass and contain more lignin - an indigestible polymer in the stem cell wall. However, selecting against lignin can impact plant morphological traits and reduce yields. The objective of this study was to compare the yield and yield components of five modern alfalfa lines ranging in stem fiber digestibility. We conducted a 2-year field trial at Rosemount, Minnesota. The high lignin line had a greater herbage yield than the low fiber digestibility and high fiber digestibility lines. As hypothesized, the high lignin line had the longest stems, and consistently thicker stems than the reduced lignin & high forage quality lines. Compared with the high lignin line, the low fiber digestibility & high fiber digestibility lines had shorter stems that were thinner in the third-year stand & had fewer nodes at the flowering stage. Despite being divergent for stem digestibility, the low fiber digestibility & high fiber digestibility lines had similar morphological traits, except that the latter had more nodes at the early flower stage. The reduced lignin line had shorter, thinner stems and fewer nodes at the flowering stage than the high lignin line but both had similar yields. Given the relationship between stem morphological traits and forage nutritive value, chemical analysis of the stems is forthcoming to enable comparisons of forage quality among the alfalfa lines studied here.