

# Establishing the Value of Alfalfa with Highly Digestible Fiber

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There is little data demonstrating the net effect of lower-lignin (LL) on dairy cattle. Specific objectives include: 1) Physiological and agronomic characterization of field-grown alfalfa cultivars exposed to a range of water-deficit stress conditions during different stages of maturity, and 2) Determine impacts of alfalfa hay varying in neutral detergent fiber digestibility (NDFD) on productivity and energetics of lactating dairy cows. The first production year results showed that the highest dry matter (DM) yield was observed in the conventional variety followed by lower-lignin alfalfa harvested 7 days after early flowering grown under irrigation at Kansas State University. In a Michigan State University feeding trial, treatment had no impact on milk yield or protein content, but lower-lignin (LL) alfalfa hay linearly decreased milk fat concentration when it replaced a conventional variety (CON; Hibriforce 3400). The LL hay was a 50:50 blend of an engineered LL alfalfa, HarvXtra 54HVX42 and a breeding-derived LL variety, HiGest 460. Total-tract NDF digestibility was also linearly decreased by LL, with no impact on total-tract crude protein (CP) or starch digestibility. In a University of Nebraska feeding trial, no difference was observed for milk fat yield and content or milk protein yield and content. No differences were observed on total-tract digestibility (%) of DM (averaging 67.2), NDF (averaging 51.0), or CP (averaging 67.2). Feeding study results from both Michigan and Nebraska suggest that replacing conventional alfalfa with lower-lignin alfalfa has no beneficial effects on milk production, milk composition or nutrient digestibility.