

## SOUTH DAKOTA - Foliar Application Impacts Yield & Nutrient Composition of Alfalfa Hay

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Interest in production of highly digestible forages has expanded to evaluating foliar application of micro-nutrients for forage production. Forages are the major ingredients in rations, which can supply nutrients to meet the nutrient requirements of lactating dairy cows. Feed represents 50-70% of milk production cost. Increasing forage nutrient concentrations and digestibility reduces purchased feed costs, improves feed efficiency, and contributes to dairy operation sustainability. Essential micro-nutrient foliar application to alfalfa may support enhanced yield and nutrient composition. The study objective was to determine response to micro-nutrient foliar application on dry matter (DM) yield and nutrient composition of hay when applied to an existing alfalfa stand. Two fields, 94.9 acres total, were selected and split in half. After first cut and during green up of second crop, half of each field was sprayed with Foliar (9.5 liters/ac; proprietary product); the remaining half was an untreated Control. Each Foliar or Control field was further divided in half to give replicated observations. There were 28 days between first and second cutting. After cutting and drying in the field, alfalfa was harvested as large square bales with ~14.2% moisture. Bales were weighed and eight total samples were taken with a standard hay probe and submitted to a commercial lab for nutrient concentrations and digestibility measurements. The Foliar application significantly ( $P<0.05$ ) increased DM yield compared to the Control (.66 and .60 ton/ac for Foliar and Control, respectively). Digestible DM (.41 and .36 ton/ac) was greater ( $P<0.01$ ) for Foliar compared to the Control. Nutrient composition of the Foliar and Control hay is shown in Figure 1. Concentrations of crude protein (CP) and non-fiber carbohydrate (NFC) were significantly ( $P<0.05$ ) increased and in vitro digestible DM was numerically increased for Foliar compared to the Control, which had numerically higher NDF and ADF concentrations. Improvement in digestibility can be explained by a significantly ( $P<0.05$ ) lower lignin concentration for Foliar compared to the Control. These nutrient changes resulted in the Foliar having a significant higher net energy for lactation ( $NE_L$ ) content (.59 and .54 Mcal/lb) compared to the Control. Application of micro-nutrients via Foliar spraying increased DM yield and nutrient digestibility of harvested alfalfa, which supports greater milk production and feed efficiency potential.

**Figure 1.** Nutrient composition of Test and Control Plot alfalfa hay.

