# The Impact of Tedding on Alfalfa Quality

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A five-acre research trial was conducted at the University of Wisconsin-River Falls Mann Valley Farm during the summer of 2018. This study evaluated the impact of tedding on the quality of alfalfa for silage production. We expected to see a higher-quality crop from tedding due to reduced drying time in the field, but could this increase in quality offset the cost of the added field operation?

**Figure 1.** Summary of quality data from three cuttings of alfalfa, half of each cutting was tedded and half swathed.

**Cost Scenario**

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Try Another Scenario

| Selected Implement | Implement Type | Cost Per Hour | Cost Per Acre | Cost Per Ton |
|---|---|---|---|---|
| GF 10812 T | Tedder | $136.27 | $11.34 | $11.34 |
| Combo 8830D and 3125 | Triple Mower | $319.24 | $17.26 | $17.26 |
| KUHN MM 700 | Merger | $180.33 | $15.50 | $15.50 |
| John Deere 640C (Medium SPFH) | Windrow Pickup | $285.17 | $35.60 | $35.60 |
| | **TOTALS:** | **$921.01** | **$79.70** | **$79.70** |

Previous research has shown tedding results in an increased drying rate as it increases the cut-to-swath width ratio (CSR). Modern-day mowers have a CSR of ~50-70% at best performance, meaning a 12' mower will result in a swath width of ~6-8'. By tedding, the crop is spread out creating a nearly 100% CSR. The sun's full potential is used to dry the crop, causing an increased drying rate. From the increased drying rate, it would be expected there would be reduced losses due to cellular respiration, causing a higher quality end product.

**Table 1.** Summary of quality data from three cuttings of alfalfa, half of each cutting was tedded and half swathed.

| Treatment | Moisture (%) | CP (%) | NDF (%) | WSC (%) | Ash (%) | TDN (%) |
|---|---|---|---|---|---|---|
| Tedded | 51% | 21.1 | 39.5 | 7.3 | 10.2 | 65.9 |
| Un-tedded | 62% | 21.7 | 38.7 | 6.5 | 11.0 | 65.9 |
| P-value | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | N.S. |

The field trial was replicated over the first three alfalfa cuttings in May, June, and July. Prior to cutting, pre-harvest samples were collected to serve as a quality base value. Then the field was cut and split into four sections, two tedded and two un-tedded, to minimize variability. After designating sections, tedded sections were immediately tedded and un-tedded sections were left in original swaths. The next day, the field was harvested and quality samples were taken from each section (average quality characteristics over the first three cuttings are summarized in Table). The ideal quality characteristics are lower NDF, ash, and CP with higher water-soluble carbohydrates (WSC) and TDN. Tedding the crop resulted in slightly lower CP, higher NDF and WSC, and lower ash content. However, little practical significance would be attributed to these results. In addition, a decision tool was developed for farmers to understand the impact tedding has on final product cost. This tool is set up so the user can calibrate it to their operation. The user can search the current database of equipment and tractors or add their own. The cost per hour, acre, and ton are automatically calculated. Lastly, the user can run multiple scenarios where they can mix and match equipment to compare the entire cost of the operation in total cost per hour, acre, and ton. For most operations, the cost of the additional operation would not outweigh the small increase in quality we found. However, an additional factor not easily quantified is the reduced risk on the crop due to a rainfall event.

While tedding may not fit every operation, it expedites making high-quality silage with minimal forage quality impact. The question will be whether the advantage can be taken given your operation.