

How Much Less Should I Pay Someone for High-Chop Silage?

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As dairy farms expand in terms of cow numbers, expansion of crop acres must also occur to meet feed needs. Corn is a high-tonnage, high-energy forage many dairymen use in feeding rations. They often contract with neighboring farmers for increased forage needs. Negotiating a fair contract is challenging.

Recently I was asked, “How much less should I pay for corn silage when the field is chopped higher?” The short answer is, not much. Plant parts differ in amount of fiber and digestible energy. Cutting corn silage higher can increase quality since lower parts of the plant are poorly digestible, but chopping higher can also reduce yield. Most of the energy and value (quality) is in ear kernels.

Table 1 shows the yield and quality trade-off existing for yield, moisture, milk per ton, and milk per acre during 2016, an exceptionally high grain-yielding year. Among the eight hybrids tested, corn silage yield decreased 8.3% as the cutterbar was raised from 6" to 24" above soil. Other studies report yield changes ranging 7-15% depending on cutting height. Grain yield can be a major factor influencing yield impact of higher chopping. High yield has less influence on cutting height differences than low yield.

Table 1. Cutting height effect on forage yield and quality of eight corn hybrids at Arlington, WI, 2016.

| Cutting Height | Yield (tons/ac) | Moisture (%) | Crude Protein (%) | NDF (%) | NDFD (%) | Starch (%) | Milk Ton (lbs) | Milk Acre (lbs) |
|----------------|-----------------|--------------|-------------------|---------|----------|------------|----------------|-----------------|
| 6" | 10.8 | 68.4 | 7.7 | 39 | 58 | 38 | 3460 | 37300 |
| 24" | 9.9 | 64.6 | 7.7 | 34 | 60 | 42 | 3590 | 35500 |
| LSD (0.10) | 0.2 | 0.4 | 0.1 | 1 | 1 | 1 | 30 | 900 |

Raising the cutterbar increases starch content and neutral detergent fiber digestibility (NDFD) while neutral detergent fiber (NDF) decreases, causing the milk per ton quality index to increase. So even though silage yield decreases 7-15% by raising the cutterbar 12-24", quality (milk per ton) increases, and milk per acre decreases 3-5%.

Most important reason for adjusting cutting height – it can be a logistics tool for farmers and custom operators to manage forage moisture. At harvest, the focus of the dairyman should be on chopping corn at the correct moisture for the storage structure to ensure proper fermentation and ensiling. Since harvesting silage ≥ 12 " generally increases dry matter in the harvested crop by 2-4% (Table 1), managers could harvest earlier or adjust “on-the-go” for field variability. Silage generally dries down at a rate of $\sim 0.5\%$ /day, meaning harvesting could occur 4-8 days earlier. When the crop is already too dry, it is best to harvest at the normal 6" height.

Chopping higher can also leave more residue in the field, reducing soil erosion potential. Often rye is seeded as a cover crop in fields harvested for corn silage. The following spring, remaining corn stalks could be harvested with ryeage.

Some specialty hybrids contain more sugar in the stalk or have high stover fiber digestibility and quality response to increased cutting height may be less. Another potential benefit with higher cutting is nitrate reductions in harvested material, particularly in drought.

Feeding studies indicate higher-cut corn silage can improve milk production when directly substituted in the ration, but can also decrease milk fat content. The resulting net economic benefit is negative to slightly positive. Take care when managing for milk fat.