



Pricing Standing Corn for Silage

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Dry and spotty weather conditions in 2002 have resulted in reduced yields of corn for silage and, in some cases, stands of corn with little grain that may only have use as silage. The ultimate determinant of the price paid for standing corn is how much the grower wants to sell it versus how much somebody wants to buy it. The pricing strategy given below is based on several assumptions, which will be discussed. This strategy should only be used as a guide, it is not the gospel.

Corn silage is not required by dairy cows, it is only a vehicle containing nutrients required by cows. Therefore, the price of the silage is based on its nutrient composition and the prices of alternative feeds. If a dairy farmer can purchase the nutrients provided by corn silage less expensively from other sources, and provide a balanced and productive ration, he should not buy the silage. Conversely, if a grower can harvest his corn for grain and sell it for more than he could make selling it for silage, he should combine the field.

To determine an accurate price for standing corn one needs to know its nutrient composition (fiber, energy, protein) and the costs of other feedstuffs in the local area and then use statistical methods to determine its value. The SESAME computer program written by Normand St. Pierre (Dept. of Animal Sciences, OSU) can make these calculations. This program was used to determine the value of the corn silage for this paper's examples. The SESAME software* is available for purchase, or your county extension agent may be able to run the program for you.

Most people will not know the nutrient composition of standing corn. Drought stressed corn usually has higher fiber, lower energy and slightly higher protein than normal corn silage. Actual composition could vary significantly from the values assumed in the example below. In the example, prices for alternative feeds are from vendors near Wooster, OH in early August, 2002. Actual prices could vary substantially based on local markets.

*SESAME software is available for purchase from the Ohio State University Department of Animal Sciences. Contact Amanda Hargett at (614) 688-3143 or hargett.5@osu.edu.

Example 1

DROUGHT-STRESSED CORN SILAGE

| | |
|--|------------------|
| Nutrient value at feeding ^{1,2} | \$30.55 |
| Less: | |
| Chopping | \$ 6.00 |
| Storage | \$ 3.50 |
| Fermentation loss (10%) | <u>\$ 3.05</u> |
| Estimated value of standing crop | ~ \$18.00 |
| Reasonable pricing range: | \$16 to \$20/ton |

¹Calculated using the SESAME computer program and local commodity prices on 8/2/02

²Estimated nutrient values: 35% DM, 50% NDF, 0.60 Mcal energy/lb, 8.8% CP

Example 2

“NORMAL” CORN SILAGE

| | |
|--|------------------|
| Nutrient value at feeding ^{3,4} | \$33.88 |
| Less: | |
| Chopping | \$ 5.00 |
| Storage | \$ 3.50 |
| Fermentation Loss (10%) | <u>\$ 3.38</u> |
| Estimated value of standing crop | ~\$22.00 |
| Reasonable pricing range: | \$20 to \$24/ton |

³Calculated using the SESAME computer program and local commodity prices on 8/2/02

⁴Based on 35% DM, 45% NDF, 0.66 Mcal of energy/lb, 8% CP

The SESAME program calculates the value of a feed when it is actually fed. Standing corn must first be chopped, then ensiled, and stored before it is fed. Costs, losses, and risk are associated with each of these steps. The cost of chopping usually ranges from \$4 to \$7 per ton of silage [assumed to contain 35% dry matter (DM)]. Chopping costs per ton decrease as yields increase. Because of lower yields caused by drought, we assumed a chopping charge of \$6/ton (35% DM) for drought-stressed

corn compared to \$5 per ton for normal corn. Storage costs typically range from \$3 to \$4 per ton.

On average, about 10% of the material put into a silo is lost via fermentation (shrink). Additional storage and feeding losses do exist but are borne solely by the dairy farmer and do not enter into the equation to price standing corn. Based on these assumptions, drought-stressed standing corn has a value of approximately \$18/ton (35% DM) to a dairy farmer. A reasonable range is \$16 to \$20/ton. In comparison, average normal corn silage with average yield and using the same prices for alternate feeds has a value of approximately \$22/ton (at 35% DM).

The last factor affecting the value of standing corn is risk. A farmer purchasing standing corn is assuming risk (is the corn high in nitrates? will it ferment properly?, etc.). We do not know how to put a value on risk but the price a buyer should be willing to pay should be less than the actual calculated value.

Adjusting price based on moisture content

The previous examples established a price for corn silage with 35% DM. When the crop is finally harvested, actual DM may not be exactly 35%. If the DM content is higher or lower, the price should be adjusted accordingly. When DM is higher, a ton of feed contains more nutrients and less water. When DM is lower, a ton of feed contains more water and fewer nutrients.

Sample calculation:

The price of standing corn was set at \$18/ton at 35% DM

One ton of silage at 35% DM contains:

$$2000 \text{ lb} \times 0.35 = 700 \text{ lb of dry matter}$$

and

$$2000 \text{ lb} \times 0.65 = 1,300 \text{ lb of water}$$

❖ If silage is valued at \$18/ton, then the DM is worth:

$$\$18 \div 700 \text{ lb} = \$0.0257 \text{ or } 2.57\text{¢ per lb}$$

- ❖ If, when silage was actually chopped, the average DM was 40%, then the silage contains:

$$2000 \text{ lb} \times 0.40 = 800 \text{ lb of dry matter}$$

and

$$2000 \text{ lb} \times 0.60 = 1,200 \text{ lb of water}$$

The adjusted price would be $800 \text{ lb DM} \times \$0.0257/\text{lb} = \$20.56/\text{ton}$

- ❖ If, when the silage was chopped and the average DM was 30%, then the silage contains:

$$2000 \text{ lb} \times 0.30 = 600 \text{ lb of dry matter}$$

and

$$2000 \text{ lb} \times 0.70 = 1,400 \text{ lb of water}$$

The adjusted price would be $600 \text{ lb DM} \times \$0.0257/\text{lb} = \$15.42/\text{ton}$

The final price for very wet (less than 30% DM) and very dry (greater than 40% DM) corn silage should be discounted further from the calculated price adjusted for DM. Very wet corn does not ferment properly and has a high potential to cause lower feed intakes. Very dry corn also does not ferment well and frequently results in lower digestibility due to heat damage and mold growth. This silage may also have a lower NEL (net energy lactation) and a shorter bunk life than corn ensiled at the proper moisture level.

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