

Pricing Standing Corn for Silage

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Every year in August, we hear the same question from farmers, nutritionists, and FSA loan officers, “How much is standing corn worth for corn silage?” There are number of different formulas available in the literature for determining the value of standing corn for silage. These formulas range from simple to very complex and all have numerous assumptions depending on who developed the formula, an economist, an agronomist, or a nutritionist. We have decided to keep to the simpler side and rely on simple market economics. There are also two perspectives to consider when pricing standing corn for silage, the seller’s (i.e. the person growing the corn) and the buyer’s (i.e. the farmer needing to fill his silo). For this analysis, we are assuming that all corn chopped to make silage will be harvested at the same moisture (i.e. 65%) and will have the same feeding value coming out of the silo.

Before we discuss pricing, there are some major distinctions that need to be defined. ***Standing corn is not corn silage!*** Standing corn is the corn as it stands in the field waiting to be harvested. Once the standing corn is harvested, it becomes chopped corn. Chopped corn then has to be transported to and placed in a storage facility (e.g. upright silo, bunker silo, plastic bag, or pile). Chopped corn becomes corn silage only after undergoing full fermentation while in storage. During storage, fermentation and spoilage reduce the amount of material than can be fed to cows, and this reduction is called shrink. Corn harvest, transport of chopped corn, filling of a silo, storage in a silo, and shrink during storage all have an associated cost. **Therefore, the price of standing corn has to be less than the price of corn silage!**

Now, let’s figure out how to price standing corn for silage given market economics. First, consider the seller’s perspective. The table below has been provided to more clearly describe the pricing process. A corn grower has two options; sell the standing corn for grain or for silage. To sell corn for grain, the seller must deliver the corn to a local market for a contracted gross price per bushel; this represents the Chicago Board of Trade (CBOT) price plus basis. The basis in Southeastern PA can range from \$0.25 to \$0.40 per bushel. To deliver the corn to market, the standing corn must be harvested, transported, dried, often stored, and then, transported to the market. So, the net value of the standing corn being sold for grain equals the gross price per bushel minus the cost of harvest, transport, drying, and storage. In order for a corn grower to sell his standing corn for silage, the corn grower must receive a price equal to or above the net value of the standing corn if it were sold for grain.

Here is an example of how the seller might determine the net value of his standing corn. See the table below for a clear description. The local price per bushel for September corn on August 7th was \$5.50 per bushel, based on the CBOT price of \$5.22 plus \$0.28 for basis. If average yields in Lancaster County are 160 bu per acre, then the corn grower might expect to generate approximately \$880 in gross revenue per acre. Estimated costs for harvest, transport and storage, and drying are \$40/acre, \$0.25 per bushel, and \$0.60 per bushel, respectively. Therefore,

estimated net value of the standing corn per acre is \$704. If average yields for chopped corn are 25 tons per acre, then the corn grower would need to sell the standing corn for \$28.16 per ton of chopped corn to receive the same net revenue per acre. A seller must also consider the risks of market fluctuation and potential field losses from the end of silage harvest to the corn delivery date.

Now, let's consider the buyer's perspective. Again, refer to the table below for a description of the pricing process. A dairy farmer needing to buy corn silage has two options: buy standing corn at harvest or corn silage from a silo as needed. The market price for corn silage at 35% dry matter (DM) coming from a silo has ranged from \$53 – 55 per ton for the past three months regardless of the CBOT price for corn. Those market prices takes into account the value of the corn, harvest costs, storage costs, and shrink. Harvest costs are ranging from \$7 to \$10 per ton depending on the equipment used and distance from field to silo. Storage costs range from \$1 to \$3 per ton depending the type of storage structure (e.g. bunker, upright, or bag). Shrink during storage typically ranges from 10 – 20%. To determine the net value of standing corn for corn silage, the buyer must subtract the harvest, storage and shrink costs from the market price of corn silage.

For example, a buyer determines that he can have corn chopped, hauled and put in his silo for \$10 per ton, his storage costs are \$2 per ton of chopped corn, and his expected shrink during fermentation and storage is 20%. If the current market price of corn silage is \$55 per ton, then

Grower's Perspective			Buyer's Perspective	
(to Net the same amount from selling Standing Corn as if harvesting Shelled Corn)			(to Pay the same as buying corn silage from a silo)	
	Per Acre	Per Bushel	Buy Standing Corn	Per Ton
Grower's Gross Income(bu x price)	\$ 880.00	\$ 5.50	Price of corn silage from silo*	\$ 55.00 *includes delivery charge
Harvest cost per acre (\$40/acre)	- \$ 40.00	\$ 0.25	Harvest cost (\$10/Ton)	- \$ 10.00
Grain Hauling (field to mill \$.25/bushel)	- \$ 40.00	\$ 0.25	Storage Cost (\$2/Ton)	- \$ 2.00
Drying Charge (\$.60/bushel)	- \$ 96.00	\$ 0.60	Dry Matter Loss (20%)	- \$ 11.00
Chopped corn price, breakeven with shelled corn net	= \$ 704.00	\$ 4.40		
Potential chopped corn yield (Tons/acre)		25.0		
Price per Ton of Chopped Corn needed to Equal Shelled Corn Net	= \$ 28.16		Price per Ton of Chopped Corn needed to equal Corn silage price	= \$ 32.00

the cost of shrink would equal \$11 per ton (\$55 x 0.2). Therefore, in order for a buyer to purchase standing corn for silage, the buyer must pay a price equal to or below \$32 per ton of chopped corn, which is the net value of the standing corn for silage.

Table 1. Strategies for pricing standing corn for silage based on the seller's or buyer's perspective.

Given the current regional market for corn and corn silage, it would seem fair to allow the seller and the buyer of standing corn to begin negotiations based on their potential revenue and expenses, respectively.