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Pricing Corn Silage

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Pricing corn silage is a difficult decision because it often comes at a time when emotions between sellers and buyers are high. The seller has the opportunity to sell a corn field for either silage or grain and incorporate the fertilizer value of the stover back into the field. The buyer has the opportunity to buy a corn field for silage or buy grain from the market and purchase low quality straw (wheat or corn stover aftermath) to formulate rations.

Arriving at a fair price and being able to take into account the markets (grain, straw, milk and silage), fertilizer, harvesting and quality costs is a difficult decision. Somewhere in the middle of the seller and buyer perspectives negotiations should be able to arrive at a fair price. The Sterry et al. spreadsheet (see http://corn.agronomy.wisc.edu/Season/DSS.aspx) accounts for both the seller and buyer perspectives to arrive at a fair price for corn silage. This article performs a sensitivity analysis of this spreadsheet.

The assumptions and initial values typical for the market conditions heading into the 2013 harvest are shown on page 2. To produce the sensitivity analysis in Table 1, one input value at a time was changed on the spreadsheet for grain price, milk price, grain yield, starch content, straw price and NDFD. This can lead to somewhat ambiguous conclusions. For example, often the seller receives a lower price than what the buyer must pay for grain, however, in this example the seller and buyer grain prices are held the same. Also, when one quality measure moves in a certain direction (i.e. starch content) other measures (i.e. grain yield or NDFD) are affected as well. In 2013 many corn fields were late late-planted and affected by drought which affects yield, starch content and NDFD.

Grain prices between $4 and $7 per bushel affect corn silage price from $28 to $51 per Ton wet. Milk price affects the buyer decision much more than the seller. Low grain yields reduce the price of standing corn silage as does lower starch content. Straw price does not affect the seller perspective, but does affect the buyer perspective of a standing corn silage field because he has the option to buy wheat straw. NDFD had little effect on corn silage price in this spreadsheet. Users of this spreadsheet need to input their own data for the values used in the calculations.

Table 1. Sensitivity analysis of seller and buyer perspectives using the Sterry et al. spreadsheet for calculating the value of standing corn silage ($/T) with quality adjustments.

	Wet Basis (65%)		Dry Matter Basis	
	Seller	Buyer	Seller	Buyer
Grain price ($/bu)				
$7.00	50	51	143	145
$6.00	43	45	122	128
*** $5.00**	35	39	101	111
$4.00	28	33	80	94
Milk price ($/cwt)				
$24	36	39	103	113
*** $18**	35	39	101	111
$12	35	38	99	108
Grain yield (bu/A)				
175	35	39	99	110
*** 150**	35	39	101	111
125	35	38	99	108
100	33	36	93	103
75	29	32	83	93
50	23	27	65	76
25	12	17	35	48
Straw price ($/T)				
$100	35	42	101	120
*** $75**	35	39	101	111
$50	35	35	101	101
Starch content (%)				
34%	40	43	113	123
*** 29%**	35	39	101	111
24%	31	34	88	98
NDFD (%)				
68%	36	39	102	112
*** 58%**	35	39	101	111
48%	35	38	100	109

* The normal 2013 assumptions used in the spreadsheet example shown on page 2.

2013 Corn Silage Pricing Decision Aid

by Ryan Sterry, Lee Milligan and Joe Lauer (2007, Revised 2013)

Please enter your input values into the shaded cells. Red letters refer to explanations or guidelines at bottom. Use actual costs when possible, or refer to guidelines.

Yield Information

Grain Yield Bushels/Acre		150	
Silage % DM		35%	
	Estimated	**Actual**	***To use estimated yield**
Corn Silage/Tons Acre (Wet Basis)	19.97		19.97

Price Perspective

	Seller	Buyer	
Local Market Price for No.2 Corn at 15.5% moisture as Buyer or Seller	$5.00	$5.00	/bushel
Local Market Price per ton for poor quality/low protein forage to Buyer (a)		$75	/Ton
Average grain loss for harvest before black layer (Bushels/Acre) (b)		14	bu/A
Gross Value of Corn Crop/Acre	$750	$918	
Gross Value of Corn Crop/Wet Ton		$46	
Gross Value of Corn Crop/Dry Ton		$131	

Grain Harvest Costs (c)

Combining Cost/Acre						$50.00	
Trucking Cost/Acre = Grain yield (bu/A) x $/bushel	150	bu/A x	$0.15	$/bu		$22.50	
Drying Cost/Acre = Grain yield (bu/A) x $/bushel	150	bu/A x	$0.20	$/bu		$30.00	
Storage Cost/Acre = Grain yield (bu/A x $/bu/month x Time (months)	150	bu/A x	$0.02	$/bu/mo	9 months	$27.00	
Harvest and Storage Loss (d) = Estimated % loss	150	bu/A x	2.50%			$18.75	
Total Harvest Costs/Acre						$148.25	
Value/Acre of Corn Silage to **Seller** Adjusted for Grain Harvest Costs (Gross Value of Crop - Grain Harvest Expenses)						$601.75	
Value/Wet Ton of Corn Silage to **Seller** Adjusted for Grain Harvest Costs						$30.14	

Silage Harvest Costs (e)

Chopping $/Acre							$55.00
Hauling $/Acre							$15.00
Harvest and Storage Loss (f)	**Estimated**	Concrete tower	13%	**Actual (if known) =**		13%	$119.39
Silage Harvest Costs/Acre							$189.39

Fertilizer Value of Harvested Stover

Phosphorus Value = Pounds P205/Ton Dry Matter (from pub A2809)	Tons Stover DM/acre (See estimate to right)			Price per lb P205			Estimated stov
4.6		3.55	3.55	$0.50	$8.16		3.55
Potassium Value = Pounds K20/Ton Dry Matter (from pub A2809)	Tons Stover DM/acre (See estimate to right)			Price per lb K20			
32		3.55	3.55	$0.45	$51.11		
Total Stover Value/Acre					$59.27		
Value/Acre of Corn Silage to **Seller** Adjusted for Grain Harvest Cost and Fertilizer Value of Harvested Stover (Minimum Value to Acc					$661.02		
Value/Acre Corn Silage to **Buyer** Minus Silage Harvest Costs						$728.98	
Value of Standing Corn/Ton of Silage W/O Quality Adjustment (Wet Basis)					**$33.10**	**$36.51**	
Value of Standing Corn/Ton of Silage W/O Quality Adjustment (DryMatter Basis)					**$94.58**	**$104.31**	

Quality Adjustments for Silage (g)

Starch Adjustment/ton DM Silage	$0.00	$0.00
% Starch (DM basis)	29	29
Local Corn Price/Bushel	$5.00	$5.00
NDF Digestibility Adjustment/ton DM Silage	$6.26	$6.26
Silage NDFD (48 Hour invitro)	58%	58%
Milk Price/Cwt	$18.00	$18.00
Quality Adjustment (per ton DM)	$6.26	$6.26
Silage Base Price Estimate (per ton DM)	$94.58	$104.31
Value of Standing Corn/Ton of Silage With Quality Adjustment (Wet Basis)	**$35.30**	**$38.70**
Value of Standing Corn/Ton of Silage With Quality Adjustment (DryMatter Basis)	**$100.85**	**$110.57**

Value of Corn Silage Based on Harvest and Storage (Cost Responsibility Between Seller and Buyer).

Please indicate below which costs are the responsibility of the buyer. Silage harvest costs can be changed in lines 35-38.

Buyer Pays For (unchecked means seller assumes cost):	☐ Chopping	☐ Hauling	☐ Storage	
Chopping $/Acre		$ 55.00		
Hauling $/Acre		$ 15.00		
Harvest and Storage Loss		$119.39		
Silage Harvest Costs/Acre		$189.39	$0.00	
Harvesting & Storage Costs of Buyer & Seller/Ton of Silage (Dry Matter)		$27.10	$0.00	
Value of Corn Silage /Ton with All Adjustments (Wet Basis)		**$44.78**	**$48.19**	
Value of Corn Silage/Ton with All Adjustments (Dry Matter)		**$127.95**	**$137.67**	