



Cornell University
Cooperative Extension

Dairy Nutrition Fact Sheet
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How Do I Price Corn Silage?

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Corn silage is the primary forage fed on many New York dairy and livestock farms. There are continual questions and debates about methods that can be used to price corn silage. It is difficult to use current market prices since corn silage is not usually traded on the open market in New York. In 2011, the pricing question is even more challenging since there will be variation in the maturity of corn silage at harvest. There will most likely be some corn silage harvested with small or no ears.

Two main methods have been used to price corn silage. One is based on the quantity of corn grain (bushels/acre) in the crop. The second approach is based on the economic value of corn silage based on nutritional content. A third method that can be used would be based on the enterprise budget for growing corn grain or corn silage. On most dairy farms, there is not adequate data to use this method.

Pricing corn silage based on corn grain content

This is an attractive method due to simplicity. This method uses the relationship between grain yield and silage yield. As you would expect, this is not a perfect relationship and can be altered by many factors. The calculation used is:

$$\text{Corn silage price, \$/ton} = \text{Corn grain, \$/bushel} * \text{Corn yield (bushels/ton)}$$

If corn grain is \$8/bushel and the yield is 7 bushels/ton, then the price for corn silage (35% DM) standing in the field would be \$56/ton. Using data from the 2010 corn silage test plots in New York reported by Dr. Bill Cox, the average grain yield was 7.8 bushels/ton with a range of 6.5 to 9.2. The average grain yield from the 2009 test plots was 6.4 bushels/ton. The bushel yields were calculated using the plot yield data, plant dry matter content and plant starch content of the hybrids in these trials.

The bushels of corn grain per ton of corn silage (35% DM) can be calculated as follows:

Starch yield/acre (dry matter basis) =

Tons wet silage yield*% DM*% starch

Example:

- Yield = 20 tons/acre
- DM, % = 35
- Starch, % = 30

$$= (20 * 2,000 \text{ lbs/ton}) * 0.35 * 0.3 = 4,200 \text{ lbs. starch/acre}$$

$$\text{Bushels of grain/acre} = \text{lbs. of starch} * 0.0293 = 123$$

$$\text{Bushels of corn grain/ton of wet silage} = 123/20 = 6.15$$

Source: www.uwex.edu/ces/crops/uwforage/GrainYieldfromCornSilageII.pdf

For corn silage yields ranging from 15 to 25 tons/acre (35% DM basis), the estimated bushels of corn grain/ton of corn silage are:

<u>Starch, %</u>	<u>Bushels corn grain/ton silage</u>
20	4.1
25	5.1
30	6.1
35	7.2
40	8.2

The price determined by this method should be considered a starting point. This value does not consider harvest, storage or feeding losses. It also does not consider any variations in forage quality or feeding value. An adjustment of this price would also be needed if plant dry matter is different from 35%. Workers at The Ohio State University suggest multiplying the price determined by this method by 1.3 to estimate the value at the time of feeding. This would increase the price to \$73/ton (\$56*1.3) in this example. Worksheet A can be used to calculate the value of standing corn silage using this method.

Pricing Corn Silage Based on Nutrient Content

This approach is based on using forage analysis data and the market cost of other feeds to determine the price of corn silage. The value determined by this method is the value of the corn silage when it is fed to the cow. A number of tools are available to assist with these calculations. These include:

- Forages.xls (www.das.psu.edu/research-extension/dairy/nutrition/forages)
 - o Scroll down to Forage Value spreadsheet

- Sesame (www.sesamesoft.com)
 - o A license must be purchased for this program.

These programs had a predicted price for “normal” corn silage (35%DM) of \$70-75/ton. The actual nutrient composition of your corn silage can be entered and the price determined based on the analytical data. The feed values used in these example runs were \$300/ton for corn meal, \$378/ton for 48% soybean meal and \$186 for alfalfa hay. In the Sesame simulation, corn silage was considered a good feed buy since the market price (\$56/ton) was lower than value calculated on a nutrient composition basis.

Corn Silage Pricing Spreadsheets

There are also spreadsheet tools available that utilize more information and account for additional factors that can be used to determine the price of corn silage. These assist in doing these evaluations from both the seller and buyer viewpoints. For the seller, an evaluation of selling the crop as grain versus silage can be done. The buyer can make adjustments for harvesting and storage losses as part of the pricing and decision making process. Two examples of the available spreadsheets are:

- Pricing Standing Corn for Silage
 - o www.das.psu.edu/dairy-alliance
 - o Select Drought Survival Guide
 - o Scroll down to: Pricing Standing Corn for Silage
- Corn silage pricing decision aid
 - o www.uwex.edu/ces/crops/uwforage/uwforage.htm
 - o Select Corn Silage
 - o Scroll down to Economics and Budgeting
 - o Scroll down to Corn Silage Pricing Decision Aid

The results of all of these approaches provide a starting value that can be used in the decision making process for establishing a price for corn silage. Most of these methods assume “normal” maturity and grain fill. Additional considerations are needed for immature or poorly eared corn silage.



Worksheet A

Estimating the Price of Standing Corn Silage Using Corn Grain Price

This worksheet will assist in determining the price of corn silage based on the market price of corn grain. This values the crop standing in the field and does not include costs for harvest, transport, storage and feeding. There are no adjustments made for storage and feeding losses or variations in forage quality.

Current market price of corn grain = _____ \$/bushel
Bushels of corn grain/ton = _____ (7 is an average value)
Estimated corn silage price = _____ \$/ton

Example Calculations:

Corn (price/bushel) = \$8
Bushels of corn/ton = 7

Calculated price = \$8/bushel * 7 bushels/ton = \$56/ton

Notes:

1. To determine the price/bushel of corn grain – Divide corn grain price/ton by 35.7.
2. These calculations are based on standing corn with 35% dry matter. The final price will need to be adjusted if the dry matter varies.

Example: Standing plant is 32% DM rather than 35%

- Adjusted value = $32/35$ * Corn silage price

$$- = 32/35 = 0.91 * 56 = \$51.20/\text{ton}$$

3. The bushels of corn grain per ton do vary. An “estimate” of bushels of corn/ton of silage can be made using an analyzed starch value for the standing corn plant. Within silage yields ranging from 15 to 25/tons/acre, the following guidelines can be used:

<u>Starch, %</u>	<u>Bushels of corn grain/ton silage</u>
20	4.1
25	5.1
30	6.1
35	7.2
40	8.2

4. To estimate the value of corn silage at the time of feeding. Multiply the corn silage value determined above by 1.3