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Production Costs vs. Feeding Value of Forages

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### Introduction

Determining an equitable price for purchased forages is a necessary but often uncomfortable topic of discussion for feed growers and purchasers. Usually this discussion is in the context of corn silage. However, the principles that are used can be utilized in any discussion including hay, baleage or grains.

### Key Concepts

In order for an input market to be efficient, the price agreed upon by buyers and sellers should adequately compensate the producer while still allowing the purchaser the opportunity to use the input.

Item	Producer	Purchaser
<b>Production Unit</b>	<b>\$/Ton of Forage</b>	<b>\$/Cwt. of Milk</b>
Major Items Impacting Costs	<ul style="list-style-type: none"><li>• Weather</li><li>• Fuel</li><li>• Fertilizer</li><li>• Seeds</li><li>• Machinery</li></ul>	<ul style="list-style-type: none"><li>• Production response</li><li>• Price of output (milk)</li></ul>

### Negotiating the Price

An equitable price can only truly be reached if both parties know the value of the forage to them. Producers must know what their total cost is and purchasers must know the value of production from using the input (silage in this case). In some years it is quite possible that because of escalating inputs for the corn grower or cheaper milk for the dairy producer a corn silage price that will satisfy both producers objectives cannot be attained, in that instance, there will likely be some heart-felt negotiating that occurs between the parties.

## **Grower Perspective**

Space prohibits a full discussion of how to calculate silage costs. However, corn silage budgets are available from the UGA Extension Agricultural and Applied Economics website at <http://www.ces.uga.edu/Agriculture/agecon/agecon.html>.

The value of the silage to the producer also depends upon the alternatives for the crop because the price paid for the silage must compensate the grower for any foregone revenue from the alternative markets. The two most common examples would be grain-corn harvested for silage and corn grown strictly for silage. If the corn that is being harvested for silage could be harvested for grain and marketed as such, then the value to the producer is the value of the grain net the harvesting costs. For instance, if the corn would likely yield 150 bushels and be sold for \$4.00 per bushel then the value of the corn is \$600 per acre. If it would cost \$50 to harvest (including drying) then the value is \$600-\$50 or \$550.

Alternatively, if the corn crop grown is a silage variety, then a more correct valuation would be the value of the silage at the stage when ownership changes. For example, if a dairy producer will be purchasing a crop standing in the field ready for silage harvest a reasonable price to the corn grower is his total cost up to that point PLUS some return. Continuing our example, if the corn grower has \$500 invested in a corn crop prior to harvest and desires an annual return of 10 percent on his investment, for the 4 months that his money has been invested, then a more appropriate charge would be the \$500 plus \$16.50 return on investment (10% per year for 4 months = 3.33% X \$500).

## **Dairy Producer Perspective**

For the dairy producer, the true value of the silage will be determined by the value of the production as well as the feeding alternatives for the silage. As an example, silage fed to lactating cows will likely have a higher value of production than silage fed to heifers. It also follows that when milk prices are higher, dairy producers should be able to pay more for silage than when prices are lower.

One method that dairy producers may find useful for determining the value of silage is known as the residual value or returns to silage. Using this method, dairymen determine their net returns with all costs included except for a ZERO price for silage. If they know how many tons of silage they will feed, they can determine the most they can pay for silage.

As an example, if a producer has total costs of \$15/Cwt. for milk excluding silage and he will feed his cows 22 tons of silage to achieve a milk yield of 23,000 pounds his residual value of silage will \$52.27 per ton at \$20/Cwt. for milk, \$0 at \$15/Cwt. and (\$52.27) at \$10/Cwt. milk price. Obviously, in the last two situations, the producer will just be trying to minimize his losses so he will have to negotiate especially hard with the corn grower.

Programs such as Milk2006cornsilagev can be used to generate numbers that will help complete this analysis. A summary table showing how the numbers from this program can be used in developing the residual price is shown below.

**Table 1**  
**Maximum Sale Price for Corn Silage at Various Milk Prices**

Tons of Silage/acre	22.00	22.00	22.00	22.00
<b>Price of Milk (\$/Cwt)</b>	<b>\$ 10.00</b>	<b>\$ 15.00</b>	<b>\$ 20.00</b>	<b>\$ 25.00</b>
Pounds of Milk Produced	23,000	23,000	23,000	23,000
Gross Value of Milk/acre	\$ 2,300.00	\$ 3,450.00	\$ 4,600.00	\$ 5,750.00
Cost of Milk Production EXCLUDING Corn silage	\$ 15.00	\$ 15.00	\$ 15.00	\$ 15.00
Cost of Milk /Cow	\$ 3,450.00	\$ 3,450.00	\$ 3,450.00	\$ 3,450.00
Residual Value of Silage	\$ (1,150.00)	\$ -	\$ 1,150.00	\$ 2,300.00
Max Price for producers	\$ (52.27)	\$ -	\$ 52.27	\$ 104.55

In addition to the residual value method, producers can also compare the other alternatives to feeding silage. In other words, if a ration can be formulated without silage and will yield the same level of milk production, producers can use the cost difference in the two rations to estimate the value of corn silage.

### Other Considerations

In recent years technology has enabled the development of numerous varieties designed specifically for corn silage production. By design, the varieties can produce more milk with less tonnage than a grain variety. As a result, it is important for corn and dairy producers to think in terms of milk per acre as opposed to tons of silage per acre. Although this may complicate matters for some producers, it will likely help others determine the true value of corn silage.

To determine milk production per acre, producers will need somehow to convert silage quality, tonnage into a milk yield response. This can be done by using either a ration-formulation program, a ration evaluator or some other decision-aid.

One such decision-aid is **Milk2006Coronsilagev**. This program, available from University of Wisconsin Extension is a Microsoft Excel spreadsheet that allows producers to enter certain critical pieces of information regarding silage quality and yield and then returns an estimated milk yield per acre. Using this information, corn or dairy producers can estimate milk value per acre and then determine the value of corn silage.

### Summary and Conclusions

To arrive at an equitable price for corn silage, it is critical for corn and dairy producers to understand their costs of production as well as the value of the alternatives to corn silage.

If corn silage is sold standing in the field, corn producers can use their input cost plus some rate of return as well as the value of the silage sold as grain minus harvesting

costs. If it is to be sold delivered to the dairyman, the total cost of production plus hauling plus some return on investment should be used.

Dairy producers should evaluate corn silage in terms of its value of production as well as the value of alternative feedstuffs.

In some years, market conditions may exist that cause the price of the silage to be too high to dairyman or too low for the crop producer. In those situations, the two parties should acknowledge what is occurring and negotiate a price that inflicts minimal damage to all involved.

### **Additional Resources and Websites**

University of Georgia – [www.caes.uga.edu](http://www.caes.uga.edu)

University of Florida – [www.ifas.ufl.edu](http://www.ifas.ufl.edu)

Corn Silage Budgets - <http://www.ces.uga.edu/Agriculture/agecon/agecon.html>.

University of Wisconsin - <http://www.uwex.edu/ces/crops/uwforage/Silage.htm>

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