Pricing Corn Silage in 2007 – Notes to PPT File

**Pricing from the seller's (corn grower's) point of view:**

"Production costs (excluding harvesting) are the same whether corn is harvested as grain or silage. I want to maximize *return per acre*."

1. Estimate income less harvest costs if crop was sold for grain:

Estimate grain yield (bu./acre), multiply by price of corn if sold (from the field) as grain, and then subtract harvesting and any storage costs to get gross post-harvest return per acre. This is usually the minimum price ($/acre) for which you would be willing to sell standing corn. Harvest costs would include combining, hauling grain, drying, storage and any other marketing costs incurred for the sale of the crop as grain. For example, if estimated corn grain yield is 100 bu/acre, out of the field price of corn grain is $3.60 and grain harvest costs are $39/acre, then income less harvest costs would be $330 per acre.

Example: (100 bu./ac. x $3.60/bu.) - $39/ac. = $321/acre

2. Estimate silage yield per acre.

A. For severely drought-stressed corn that has little if any corn grain, measure height of several plants (not including the tassel). Calculate average height (in feet) and multiply by 0.9 to estimate tons of corn silage (35% dry matter) per acre. For example average height is 6.5 ft x 0.9 = 5.9 tons of corn silage per acre.

Note: This is **not** an appropriate method of estimating yield of normal or even mildly drought-stressed corn.

B. For mild to moderately drought-stressed corn, estimate grain yield (bu./acre) and divide that number by a value between 5 and 8. Five is for fields with moderate drought-stress (grain yield substantially depressed) and 8 is for fields with little drought stress (yields essentially equal to normal). If uncertain, 6 to 7 is a good compromise.

Example: Grain yield is estimated at 100 bu./acre (mild to moderate stress) divided by 6.5 = 15.4 tons of corn silage (35% dry matter) per acre.

3. Estimate price of corn silage needed to match return when selling grain.

From step 1 above, return via grain was $321/acre and estimated silage yield (step 2B) is 15.4 tons. $321/acre divided by 15.4 tons/acre = $20.84/ton of corn plants standing in field (assumed harvested at 35% dry matter). This price should be increased a bit to

cover the value of the organic matter that will not be returned to the field.

**Buyer's (livestock producer's) Point of View.**

"I don't care what I feed my cows as long as the diet provides the right nutrients. I want to maximize *return per cow*."

Determine what other feed, or more likely, feeds, can be used to provide the nutrients provided by corn silage (remember, cows require specific nutrients, they do not require specific feeds). Your nutritionist can formulate several diets with different feeds and determine feed costs for the various diets. An alternate method is to estimate the value of corn silage based on the value of the nutrients it provides. Corn silage provides net energy, effective fiber, and crude protein to dairy cows and those three nutrients comprise the bulk of the economic value of corn silage to a dairy producer.

Using a statistical technique, the economic value of those three nutrients can be estimated based on the prices and nutrient composition of all (or most) of the feeds available in a market. The method is complicated, but the calculated values appropriate for central Ohio at a specific point in time are available in the Buckeye Dairy News (http://dairy.osu.edu/bdnews/bdnews.html).

Both methods require knowledge of the nutrient composition of the corn silage or corn plants (this is usually not known) and the future price of nutrients and feeds (also not known). When you do not have complete information, averages often are the best available option. Assuming average nutrient composition of drought-stressed corn silage and using the dollar value of nutrients averaged over the past year, corn silage (35% dry matter) has a maximum value to a dairy farmer of $47 to $61/ton (average $54/ton). A range is given because of the uncertainty associated with using averages and with the statistical method used to calculate the value of the nutrients. For normal (not drought stressed) corn silage, the maximum value would be in the $58 to $60 range based on this year's nutrient prices.

The $54/ton (+/- $7/ton) price is the maximum price a dairy farmer should be willing to pay for corn silage *when it is fed to the cow*. In other words, all costs and losses associated with silage making have been paid. A dairy farmer should not pay more than about $54/ton because other feeds could replace corn silage at a lower cost.

To arrive at a price to pay for a standing crop based on the $54/ton (+/- $7/ton) nutrient value, the costs for harvesting, storing and associated shrink and risk must be deducted.

The average cost of storing corn silage is about $4/ton (35% DM) and since the dairy farmer usually owns the storage system this cost is deducted. During good fermentation approximately 10% of the dry matter put into a silo is lost (carbon dioxide, seepage, etc.) and this cost, sometimes referred to as shrink, also needs to be deducted when buying corn plants, rather than already-fermented silage.

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| **Maximum feed value of corn silage when fed to a cow:** | **$54/ton** |
| Cost of storage | - $4/ton |
| Cost of shrink | - $5/ton |
| **Maximum value of chopped corn plants when put in silo** | **$45/ton** |

If you are purchasing standing corn and the dairy farmer is paying for chopping, that cost must also be deducted:

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| **Maximum value of chopped corn plants when put in silo** | **$45/ton** |
| Cost of chopping, hauling, fill | - $6/ton |
| **Maximum price of standing corn plants (before risk)** | **$39/ton** |

When a dairy farmer purchases either standing corn or chopped corn plants, he is assuming it will have the correct dry matter, ferment properly and turn into good corn silage. This usually happens, but not always. Drought-stressed corn carries the additional risk of having high nitrates. The risk of a poor fermentation and high nitrates must be considered and the price of either standing corn or chopped corn plants should be discounted. Negotiations between the grower and dairy farmer ultimately determines this discount.

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| **Maximum price of standing corn plants** | **$39/ton** |
| Risk adjustment (negotiated) | -Negotiated |
| **Maximum price of standing corn plants (after risk adjustment)** | Negotiated |

**Determining Actual Selling/Purchase Price**

In the example above, the grower must sell standing corn plants at $22.50/ton (the $21.40 calculated in Step 3 was increased to cover the value of organic matter) to make the same return as he would if he sold the crop as corn grain. The standing corn plants are worth something less than $39/ton to a dairy farmer. Therefore the negotiation range would be between $22.50/ton and $39/ton. On average, things average out which means the selling/buying price for standing corn in this example would be about $30/ton.

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