Pricing Corn Silage

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The objective of this fact sheet is to lay out an organized thought process for pricing corn silage, from a custom growing basis, prior to planting. This is not a discussion of pricing corn silage out of the silo following harvest. The procedures we describe are applicable to a wide range of similar questions.

Our fundamental point of departure is: “If a producer is going to grow corn silage, the corn silage should be priced such that the grower will generate at least as large an economic return – with an appropriate adjustment for risk if necessary – as would have been earned had the resources been used to produce another crop.” Here, we are going to assume that if the corn crop were not harvested for silage, it would be harvested as grain and sold. Thus, the issue is: “What price of corn silage on a per ton or per acre basis is required to generate the same expected net return to land and other common resources as would be achieved by growing and selling corn as grain?”

We will take a partial budgeting approach to the problem. That is, what costs and what returns are different between the two systems; we’ll ignore those costs that are the same for both systems.

**Items to Consider:**

1. **Price of Corn**

   Producers have used a variety of mechanisms to arrive at a local corn price. Some, to establish a price prior to harvest, treat raising corn silage very much like cash forward contracting corn grain. They use the local cash forward contract, say averaged over a two week to a month period prior to harvest, or equivalently, the Chicago Board of Trade December futures price on corn, less local basis. An alternative approach, used by some farmers, is to use the local harvest prices, again averaged over a period, as the basis for determining equivalent return. Last, some farmers have used a combination of these prices; this is similar to a cash grain farmer who would pre-harvest a portion of their grain prior to planting and the remainder at harvest. Thus, they use an average of the local pre-plant cash forward contract and the harvest cash corn price.

2. **Yields**

   Typically, the farmer doing the contract growing will have a history that can be used to establish an expected yield. This might be the simple average of the last ten (10) years’ yields, or perhaps something like an “Olympic average” where the last ten (10) years are
taken but the low yield and the high yield are taken out and the balance of the yields averaged. This yield will reflect particular choice of hybrids and input package. The challenge is to make a reasonable estimate of what the expected corn plant forage, coming out of the field, would be given the variety of choices and other dimensions of the plan that the livestock producer would like to see. A common starting point may be to begin with the farmer’s history, assume a typical corn grain to corn plant ratio, and estimate what the silage yield would be at a stipulated dry matter content. Typically, that’s just a starting point because the hybrid that the livestock producer chooses may have a yield drag or may out-yield the grain variety.

A dimension to be very careful about in these calculations is to be explicit about what moisture assumptions are being used in both the corn grain and in the corn plant case. Typically, corn silage will be priced given a particular dry matter content and adjusted accordingly just as one would with corn grain of different moisture contents.

(3) Cost Structure

Many costs will be similar between systems and therefore may be ignored because they don’t bring anything to the analysis. However some costs will differ. Seed costs per acre may differ, fertilizer costs would be expected to differ since one is taking off more material when one harvests the whole plant, and harvesting, hauling, and processing costs are clearly quite different between corn grain and corn silage. These cost items that differ must be identified and taken into account.

(4) Worksheet

The next section is a worksheet that pulls this information together. We begin by describing the expected yields for corn grain and for the corn harvested as corn plant forage (as corn silage if it’s priced coming out of the silo), followed by the corn price that’s used in the calculation. This gives us the expected gross revenue generated if we were to harvest and sell the corn as grain. From here, we calculate those costs that are differential between systems. In our example, we’ve broken the discussion into pre-harvest costs (e.g., seed, fertilizer, herbicides, ...) with a non-machinery and labor component and with a machinery and labor component (you could use custom rates here as a first approximation, perhaps bumping them slightly since they often underestimate the true cost of providing a service). Second, we’ve identified a set of costs for harvesting, drying, and hauling which we break into a part that’s independent of yield and a part that’s proportional to yield such as drying and hauling. This lets us calculate a net return to those resources that are fixed if we were to harvest the corn as grain.

The next section then focuses on what is the break-even price for corn plant forage that would be required to generate equivalent net returns to fixed resources as we would get from harvesting corn for grain. We calculate the break-even cost for corn plants standing in the field, for the corn plant harvested, and for the corn plant coming out of the silo. These are calculated both on a dollars per ton basis and on a dollars per acre basis.
Going through this analysis systematically should provide a starting point for discussions that is transparent and provides a basis for being equitable to all parties.