Pricing Corn Silage

Since corn stands and yields are below normal, farmers may be interested in pricing their corn for corn silage. Two procedures for estimating corn grain yields prior to harvest are the YIELD COMPONENT METHOD and the EAR WEIGHT METHOD. Each method will produce yield estimates that are within 20 bu/A of actual yield.

The YIELD COMPONENT METHOD can be used as early as the milk stage of kernel development. When below normal rainfall occurs during grain fill (resulting in low kernel weights), the yield component method will overestimate yields. In a year with good grain fill conditions (resulting in high kernel weights) the method will underestimate grain yields. For the Yield Component Method, Dr. Bob Nielsen at Purdue University suggests that a "fudge factor" of 80 to 85 (85,000 kernels per 56 lb bushel) is a realistic value to use in the yield estimation equation today, since kernel size has increased.

Step 1. Count the number of harvestable ears in a length of row equivalent to 1/1000th acre. For 30-inch rows, this would be 17 ft. 5 in. Step 2. On every fifth ear, count the average number of kernel rows per ear. Step 3. Count the average number of kernels per row. (Do not count kernels on either the butt or tip of the ear that are less than half the size of normal size kernels.) Step 4. Yield (bushels per acre) equals (ear #) x (avg. row #) x (avg. kernel #) divided by 85. Step 5. Repeat the procedure for at least four additional sites across the field. Keep in mind that uniformity of plant development affects the accuracy of the estimation technique.

Example: You are evaluating a field with 30-inch rows, 29 ears (per 17' 5" = row section). Sampling every fifth ear, average row number = 16 and an average kernels per row = 33. The estimated yield would be (29 x 16 x 33) divided by 85, which equals 180 bu/acre.

THE EAR WEIGHT METHOD can only be used after the grain is physiologically mature (black layer, 30-35% moisture). Sample several sites in the field and measure off 1/1000th acre and count the harvestable ears. Weigh every fifth ear and calculate the average ear weight (pounds). Hand shell the same ears, mix grain well, and determine percent grain moisture.

Calculate estimated grain yield as follows: Step A) Multiply ear number by average ear weight. Step B) Multiply average grain moisture by 1.411. Step C) Add 46.2 to the result from step B. Step D) Divide the result from step A by the result from step C. Step E) Multiply the result from step D by 1,000.

Example: You are evaluating a field with 30-inch rows. You counted 24 ears (per 17 ft. 5 in. section). Sampling every fifth ear resulted in an average ear weight of 1/2 pound. The average grain moisture was 30 percent. Estimated yield would be [(24 x 0.5) / ((1.411 x 30) + 46.2)] x 1,000, which equals 135 bu/acre.

On average, in the lower Midwest, you get about 1 ton of corn silage (35% dry matter or DM) per 7.5 to 8 bushels of corn. Therefore, if the estimated grain yield is 140 bu/A, expected silage yield would be 140/8 = 17.5 tons. However, under abnormal growing conditions this may underestimate forage yield (i.e., there will be less than 8 bushels of grain per ton).

Based on nutrient values, corn silage is currently worth $40 to $45/ton (at 35% DM) from a silo. Deduct shrink and storage (estimated at $9/ton) and cost of harvest and filling (estimated at $6.90/ton – chop, haul and fill for a bunker silo, see OSU Custom Rates), so the maximum a farmer should pay for standing corn is ~$24.10-$29.10/ton. This assumes that the nutritional value of the standing crop is equal to normal corn silage. If grain yield is lower than normal relative to forage yield, the silage will have less starch and more fiber than normal corn silage, and this value has to be discounted additionally.

Finally, the buyer is assuming both harvest risk and fermentation risk (will the stuff ferment well?) This risk has a price and should be discounted although it is hard to calculate. NOTE: These discounts assume the corn silage is chopped at the correct DM. If it is harvested at the incorrect DM (either too wet or too dry), the value of the silage is lower. See our free CORN newsletter (2015-25) for more details.