

Making Corn Silage in Drought Conditions

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The primary goal of making corn silage is to preserve as many nutrients in the corn plant as possible, to produce a feed that is acceptable to cows, and to minimize any risks associated with feeding the silage.

Chop at the correct dry matter concentration. The factor primarily responsible for meeting this goal is the dry matter (DM concentration of the plant when chopped. This is the same whether it is a beautiful, record breaking corn crop or a severely drought stressed field with short plants containing no ears. Chopping corn silage at the wrong DM concentration will increase fermentation losses and reduce the nutrient value of the silage. Feed will be extremely expensive this fall which means that a small increase in shrink will be very costly. The recommended ranges for silage DM are:

Bunker: 30 to 35%

Upright: 32 to 38%

Sealed upright 35 to 40%

Bag: 32 to 40%

Drought-stressed corn plants are often much wetter than they appear, even if the lower plant leaves are brown. Before starting chopping, sample some plants (cut at the same height as they will be with the harvester) and either analyze DM using a Koster tester or microwave or send to a commercial lab (turn-around time may be a few days if you send it to a lab). If the plants are too wet, delay chopping until the desired plant DM is reached. The plant may continue to accumulate DM (increase yield), and you will not suffer increased fermentation losses caused by ensiling corn that is too wet.

Use a proven inoculant. When silage is worth upwards of \$80/ton (35% DM) reducing shrink by 2 percentage units has a value of about \$2/ton. Homolactic inoculants (these are the 'standard silage inoculants') produce lactic acid which reduces fermentation losses but sometimes can increase spoilage during feedout. The *buchneri* inoculants increase acetic acid which slightly increases fermentation losses but greatly reduce spoilage during feedout. Severely drought-stressed corn can have a high concentration of sugars because the plant is not depositing starch into the kernels. High sugar concentrations can increase spoilage at feed out because it is food source for yeasts and molds. Use of a good (from a reputable company with research showing efficacy) *buchneri* inoculant may be especially cost-effective with drought-stressed corn.

Check for nitrates. Drought-stressed corn plants can accumulate nitrates which are toxic (as in fatal) to ruminants. Silage from drought-stressed fields should be tested before it is fed. Ideally, corn plants should be sampled and assayed for nitrates prior to chopping (most labs offer very rapid turn-around times for a nitrate assay). If values are

high, raising the cutting height will reduce nitrate concentrations in the silage because the bottom of the stalk usually has the highest nitrate concentrations. Because forage likely will be very limited this coming year, do not raise the cutting height unless necessary to reduce nitrate concentrations. Nitrate concentrations are often reduced during silage fermentation so that high nitrates in fresh corn plants may end up as acceptable concentrations in the fermented corn silage. Silage with more than 1.5% nitrate (0.35% nitrate-N) has a high risk of causing nitrate toxicity in cattle. See the following OSU fact sheet for more details: <http://ohioline.osu.edu/as-fact/0003.html>.

Chop at correct particle length. Forage (i.e., effective fiber) is likely to be in limited supply this year. Do not chop too finely so that the effective fiber concentration of corn silage is reduced. If the corn plants have limited ear development, fine chopping is not needed for good starch digestibility. Generally a theoretical length of cut (TLC) of about ½ inch is acceptable (longer with kernel processing and BMR silage) but this varies greatly between choppers and crop moisture concentration. If using a Penn State particle size sieve, aim for 5 to 10% on the top screen.

Reduce Shrink. Fill quickly, pack adequately, cover, and seal the silo as soon as you are done filling. Practicing good silage-making techniques can reduce shrink by more than 5 percentage units, which can be worth more than \$4/ton of corn silage (35% DM).