

Texas Dairy Matters

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TIPS FOR HARVESTING IMMATURE OR FROST BITTEN CORN SILAGE

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Excessive moisture content, immature harvesting, hail damaged and frost laden corn are some of the many challenges producers face when making decisions on when and how to ensile corn. This is an important decision that affects the dairy for months to come when it is fed to cows. Getting the proper quality forages into the lactating dairy cow means more milk, in turn, increasing profitability. With increasing feed prices and lower milk-to-feed ratios, properly harvesting and ensiling corn is a high priority. Below are a few suggestions for getting good ensiled corn.

1. The first rule for good corn silage is moisture content. Whether it is bags, bunkers or silos you want a 70 – 60 % moisture content (30 – 40 % dry matter) for proper fermentation and compaction. If you are monitoring milk line, the optimal stage is 1/3 to 2/3 milk line from the tip of the kernel. Remember once corn dents, corn matures rapidly or dries down depending upon weather conditions.
2. If faced with harvesting immature corn for silage, allow the corn to mature as long as possible to increase dry matter yield per acre. Always follow the the first rule when determining when immature corn is ready for harvest. After a killing frost corn rapidly dries down, so don't wait too long and allow the corn to get too dry or lose dry matter through leaf loss or stalk breakage.
3. Immature silage still has good feed value (starch may be lower, but energy is similar to normal silage), however dry matter tons per acre are lost. Add proven inoculants to reduce the loss of dry matter (2 – 3 % improvement) and



increase digestibility (2 – 3 units). Expect a \$2 – 7 return on investment per ton of treated silage, when fed to high producing cows.

4. When kernel processing corn that has experienced a killing frost, tighten down the rollers to 1 to 2 millimeters. On the other hand, open the rollers to 4 to 5 millimeters for immature, wet corn silage. Monitor plant processing while chopping. Put one quart of chopped silage into a bucket of water. Let the kernels drop to the bottom. Skim off the floating plant materials. Examine the kernels for cracking.
5. Chop length may be reduced to less than ½-inch theoretical length for corn that has had a killing frost or increased to a ¾-inch theoretical cut length for immature, wet corn. Use the guidelines in Table 1 to check the particle size distribution.

Table 1: Guidelines for particle size distribution in corn silage when using the 3-box Penn

Screen	Particle Size	Un-processed	Processed
	inches	----- % of Sample -----	
Upper Sieve	> 0.75	3 - 8	15 - 20
Middle Sieve	0.31 – 0.75	45 - 65	45 - 60
Bottom Pan	< 0.31	30 - 45	20 - 35

6. Nitrate levels can be elevated in immature corn with the highest levels in the base of the corn stalk. Test corn silage after ensiling is complete and adjust the ration appropriately. Do not add urea or ammonia to immature corn since this adds to already high levels of nitrates.

The nutrient value of frost-damaged, immature corn harvested as silage is about the same as normal corn silage. Expect some reduction in tonnage yield when corn maturity is reduced. Corn that is stunted due to excessive moisture and flooding should not accumulate high levels of nitrate. Late planted corn that is growing normally and is frost damaged; however, has some potential for nitrate accumulation, although the risk is low. Since nitrate levels usually decline during fermentation, wait to test for nitrate accumulation until after the ensiling process is completed.

Once the corn ensiling process is complete, test your corn silage for ADF, NDF, lignin, in vitro digestible NDF, starch and fermentation profile. Utilize this information and consult your nutritionist at the time of feeding to obtain a balanced ration with the nutrients needed to meet the high demands of the lactating dairy cow.

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