

HARVESTING IMMATURE CORN SILAGE

Much of the corn harvested in Cache County this year will be immature because of delayed growth in late May and early June. Most of the corn was planted in a timely manner, but cooler temperatures did not favor vigorous growth. As such, corn has been behind schedule for the entire growing season, and early September frosts have dashed our hopes for a late fall.

Now that frost has come, growers will be tempted to immediately start the chopper and fill the silage bunker. Most agronomists and nutritionists encourage delayed action, however. Although dead frosted leaves give the appearance of rapid dry down, most of the moisture is in the stalk and grain. Leaves are a small fraction (<15%) of the entire plant and the plant may still be too wet when the leaves are brown and dry. Several days of field drying may be required to reach an acceptable moisture level for adequate packing and fermentation. Field losses will increase with time, but producers need to balance harvest losses against fermentation losses and quality problems with wet silage.

Corn must be ensiled at the appropriate moisture level to get proper fermentation for preservation and optimal nutritional value. Harvested too wet, silage loses soluble nitrogen and carbohydrates to leakage. On the other hand, silage that is chopped too dry may lose leaves and won't pack properly, setting the stage for inefficient fermentation. Harvesting corn silage when the entire plant is between 60 and 70 percent moisture will provide the best combination of dry matter yield and digestibility. It is also the moisture level where the best silage fermentation occurs. As a general rule, whole-plant moisture usually decreases about 0.5% per day during September. Growers are encouraged to chop a sample of silage and use a Koster Tester or microwave oven to determine percent dry matter. Details on how to accurately determine whole plant moisture is explained in a USU Fact Sheet entitled "Harvesting Corn Silage by Plant Moisture" <http://extension.usu.edu/files/publications/>.

Growers may consider increasing the length of cut to compensate for harvesting immature silage corn. Research at Michigan State University demonstrated that coarsely chopped silage increased the effectiveness of fiber by stimulating chewing and salivary buffer flow into the rumen. Immature corn forage can be chopped more coarsely than mature corn for silage because the ears are much less developed and kernels are soft and do not need to be ruptured during harvest to be digested. Cob disks will also be less of a problem with immature ears. An additional benefit of longer cutting lengths is a savings on power costs with the corn chopper.

Another potential strategy to prevent excessive seepage losses from corn harvested before the ideal time is to ensile other feeds with the silage. Chopped alfalfa hay, rolled grain or other feeds may be used to reduce the overall moisture level of the silage. The choice of dry feed additions should be related to the final diet to be fed to the producer's livestock. Use feeds that would normally be added to the silage at the time of ration formulation.

Such a process was used at the Munk Dairy in Amalga last fall. About mid September 2009, some local growers were wondering what to do with rained-on alfalfa hay. Shane and Sid made the decision to buy some hay, chop it, and place it in the bottom of their bunker silo. Then they chopped their corn and packed it on top of the hay. We tested the hay in September, before covering it with silage, and again

tested the hay in January 2010. Relative feed value of the hay increased 13.91 points during that time period, and percent protein increased 3.66 percentage points. There was also a 3.87 percent improvement in NDF. There was no seepage loss from the corn silage, and the palatability of the entire mix was exceptional.

Though the timing of corn silage harvest may not be ideal, growers need not despair. Silage from corn that is slightly immature is still good feed. Balanced rations may require more grain be added to the diet than normal, but if immature silage corn is harvested at the appropriate moisture level, it might improve milk production because of higher starch and fiber digestibility.