

## INCREASING MILK, MEAT & MONEY WITH QUALITY CORN SILAGE

Utah growers produce approximately 990,000 tons of corn silage annually, providing important forage in diets for dairy cattle and in beef feedlots. Corn silage that has been properly harvested and stored is extremely palatable, superior in energy content, a great fiber source, and relatively consistent in quality. This high palatability encourages feed intake which contributes to higher milk yield, greater weight gain and additional growth. A single harvest activity often yields nearly 30 tons of forage per acre, making the cost per ton of dry matter much lower for corn silage than for other harvested forage crops.

As corn matures, the grain content increases, providing more energy, the most valued component of the silage. During this same time the stalks and leaves of the plant become more fibrous, making the total plant less digestible. The objective of selecting the proper harvest maturity is to get the greatest amount of grain production and overall yield without decreasing the digestibility of the plant significantly and maintaining adequate moisture for efficient packing and rapid fermentation.

At a recent field day in Lewiston, experienced agronomists suggested much of our Cache Valley silage corn would not be ready for harvest until the end of September. Growers were cautioned about “jumping the gun” and harvesting before the plants reach physiological maturity. On the other hand, waiting too long is also problematic. Too often, growers make the decision to harvest by simply watching their neighbors.

The milk-line is often used as the preliminary method for estimating corn moisture. On an individual corn kernel, the milk-line is the interface between the solid and liquid portions of the kernel. This line appears about the time the kernel starts to dent and will move from just below the crown (top) of the kernel toward its base as it matures and dries. A general rule is that it takes 20 days for the milk-line to advance from the top of the kernel to the bottom. When the milk-line is gone, the crop is about at physiological maturity.

Although visual observations, such as denting and kernel milk-line provide good estimates of whole-plant moisture, they are not accurate measurements. It is very hard to guess the moisture content by visual observation alone. Two commonly accepted tools for measuring moisture levels are the Koster tester and the microwave oven. The Koster moisture tester is a portable, forced air electric drying unit. Samples take about 30 minutes to dry for an accurate reading. The microwave oven method is widely accepted. The Extension office has an information sheet detailing the process to follow when using the microwave method. Forage moisture determinations can be done accurately and relatively easily with the microwave.

When concentrates are expensive, nutritionists usually recommend more corn silage in dairy rations as an energy source. Alfalfa hay is used as a cheap source of protein and both silage and alfalfa provide most of the fiber credits. However, many growers have perfected the process of producing exceptional alfalfa hay where a Relative Feed Value of 200 is not uncommon. High RFV and low ADF and NDF values often make it difficult to get sufficient fiber in dairy diets. A minimum volume of long particles is essential in the diet to insure proper rumen health by promoting rumination and salivation.

Most growers or silage contractors have the ability to chop corn at a faster rate than it can be properly packed and slowing the delivery rate is typically not a realistic option. One commonly used guideline is the need of 800 pounds of packing weight per ton of silage delivery rate per hour. (Example: 100 tons per hour delivery rate needs 80,000 pounds of packing equipment) Packing density can be improved if workers limit push-up layers to 6 to 12 inches and have plenty of tractor power, with adequate weight, to pack silage to a density of 15 to 18 pounds dry matter per cubic foot. Most farmers need more than one packing tractor to keep up with the chopper. The heavier the packing tractors, the better will be the density of the corn silage. Tractor weight can be increased by adding weight to the front of the tractor or to the 3-point hitch on the back. Filling the tires with fluid is also helpful. Dual wheels can provide additional tractor weight and stability. Extra time spent packing the surface will improve density of the critical top level by assuring sufficient wheel contact over the entire surface.

Chopping corn and packing bunkers can be dangerous work. Powerful equipment, hasty workers, and long hours are a perilous combination. Careful operators give priority to properly maintained equipment and being certain all guards and shields are in place. Always be sure to turn off equipment when making adjustments or diagnosing problems. Watch carefully for distracted workers when dumping trucks or packing bunkers. Don't get silage packed too high or too steep and roll the packing tractor. It is wise to space tractor and equipment wheels as far apart as possible to increase stability. Accidents happen quickly and workers can never be too careful.

Understanding silage performance as maturity advances will increase the odds of maximizing milk, meat and money per forage acre.