

## CHOPPING AND STORING QUALITY CORN SILAGE

The mornings are getting cooler, irrigation water is all but gone and in only a few days we'll be chopping corn for silage. Utah growers produce approximately 990,000 tons of corn silage annually, providing important forage in livestock and dairy diets. Properly harvested and stored, corn silage is extremely palatable, superior to other forages in energy content, a great fiber source, and relatively consistent in quality. The high palatability of corn silage encourages feed intake which contributes to higher milk yields, greater weight gains and additional farm profits. Seedbed preparation, seed selection, soil fertility, timely irrigations, weed control, cutting length, cutting height, use of inoculants, kernel processors and proper moisture at harvest are all considerations for harvesting quality corn silage. Important as these details are, silage packing density is usually the weakest link in harvesting and storing quality corn silage.

The goal when packing corn silage is to get the maximum amount of quality feed in the smallest amount of space. Most growers or silage contractors have the ability to chop corn in the field at a faster rate than it can be properly packed at the bunker, and slowing the delivery rate is not a realistic option. As such, adequate packing to achieve the minimum recommended density of 15 to 18 pounds dry matter per cubic foot can be a challenge. Feed quality is reduced significantly in loosely packed bunkers because of increased dry matter and nutrient losses from aerobic decay.

Packing density can be improved if workers limit push-up layers to 6 - 12 inches and have plenty of tractor power on the silage pile. Proper moisture and length of cut are also critical. It takes a lot of coordination to get things done right. The higher the packing density, the better the quality of the feed.

Most farmers need more than one packing tractor to keep up with the chopper and those tractors need to carry some weight too. One commonly used guideline to maximize silage density is the minimum need of 800 pounds of packing weight per ton of silage delivered per hour. 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.

Another rule of thumb suggests dividing 18 by the weight of the tractor (in tons) to get the number of minutes of packing required per ton of wet silage delivered. For instance, assuming a packing tractor weighs 25,000 pounds or 12.5 tons. Dividing 18 by 12.5 tons means that in order to get the proper packing density on the silage pile, an operator will be packing 1.44 minutes for each ton of wet feed delivered. Other experts believe this guide is too low and suggest keeping packing time in the range of 2 to 3 minutes per ton of fresh forage. Extra time spent packing the surface will improve the density of the critical top level by assuring sufficient wheel contact over the entire surface. Lower densities are consistently measured along bunker walls or on the outside edges of silage piles. Paying extra attention to packing along the bunker walls with narrow tires on a heavy tractor could be a way to reduce feed losses. Only an experienced operator should be trusted along a wall with large equipment.

Silos not properly sealed immediately after harvest will have significant losses of feed quality. The average losses of dry matter vary quite a bit depending on moisture and feeding rates, but it is not uncommon to show an average dry matter loss of 30 percent from the top three feet of the bunker. Professionals recommend the use of 4-6 mm black or black/white plastic, overlapped by 4 to 6 feet, and secured with uniform weights such as 15 to 20 used tires per 100 square feet. Protecting chopped corn from exposure to oxygen, sunlight, rain and snow is always cost effective. Research shows an estimated return of \$8.00 for every \$1.00 invested in covering silos. Some areas have professional crews that specialize in covering and uncovering bunker silos in a timely manner.

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, being certain all guards and shields are in place. Equipment should always be turned off when making adjustments or diagnosing problems. It is also wise to space tractor and equipment wheels as far apart as possible to increase stability. Watch carefully for distracted workers when dumping trucks or packing bunkers. Silage should not be packed too high or too steep, increasing the likelihood of rolling the packing tractor. Workers must always be careful when working around the feedout face of silage bunkers since cave-ins can bury workers with no warning. Accidents happen quickly and workers cannot be too careful.

Clark Israelsen  
Utah State University Extension Agriculture Agent  
Cache County