

Texas Dairy Matters

Higher Education Supporting the Industry

TWO KEYS TO REDUCE SILAGE LOSSES

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Texas dairy producers make lots of corn, wheat and sorghum silage. Two key steps to minimize silage losses are packing and covering.

Proper packing increases density in silage. The denser the silage, the less air movement, which reduces dry matter loss. The goal for pack density should be at least 15 pounds of dry matter per cubic foot. But how do you achieve that?

Three factors that influence how well silage is packed are:

- the rate of delivery,
- the depth of the layer, and
- the weight of the pack tractor(s).

Since we want to make silage as quickly as possible, we probably don't want to slow down the rate of delivery, so focus on depth and weight. Keep layers of silage no more than six inches deep to attain optimal densities.



To calculate how many pack tractors are needed on a pile of silage, multiple the tons of silage delivered per hour by 800 and then divide by the weight of the tractor. For example if 250 tons of silage are delivered an hour and the pack tractors weigh 40,000 pounds each, then 5 tractors are needed. (250 tons/hour times 800 equals 200,000, which when divided by 40,000 equals 5 tractors required)

With five tractors working on a pile at one time, safety can be an issue. Work with the employees in advance to develop a systematic approach so they don't run into each other as they drive across the length and width of the pile. Maintain a side slope of 3:1 or about 30% to minimize roll-over risk. Set the maximum pile height limit (usually 10 to 12 feet) based on the reach of the loader or silage defacer that will be used to remove silage for feeding.

Once the pile is constructed, cover immediately. If not covered, dry matter losses in the top three feet of bunk silos can exceed 50 percent. And the nutrient value of the feed left is reduced.

Most producers use bunk or trench silos for economic reasons. To protect that investment in silage, cover it with polyethylene sheets weighted down with tires that abut each other. Based on work from Kansas State University, the extra step of covering a bunk silo can reduce top spoilage from 50% to 20%.

If you aren't convinced that covering your silage is economically justified, calculate the net return to covering your silage, using these four factors:

Example Assumption

a) The value of your silage in \$/ton	Corn Silage = \$60/t
b) The cost of the polyethylene sheets	\$0.055 per ft ²
c) The cost of the tires used to weight the sheeting	Zero cost
d) The cost of the labor to cover the silage	\$20/hr

Determine the amount of silage in the top 3 feet of the silo by multiplying the width, length and depth times one another and then by the silage density (45 lbs./ft²). Divide that by 2000 to convert to tons. Example: For a 40 ft by 200 ft silo, the calculation would be (40 ft. X 200 ft. X 3 ft. X 45 lbs./ft²)/2000 lbs./ton = 540 tons of silage in the top three feet.

Thus, a 50 percent loss in our example unsealed silo would be \$16,200 (540 tons X \$60/t X 50%). Seal the silo and the loss decreases to \$6,480 (540 tons X \$60/t X 20%). Calculate the cost of sealing the silo as follows: estimate the cost of the polyethylene at \$440 (\$0.055 per ft² X 8000 sq.ft.) and 20 hours labor to cover the stack at \$400, the total cost to cover is \$840.

Finally, calculate the net return to sealing the silo.

Silage loss unsealed	\$16200
Silage loss sealed	- 6480
Cost of sealing	- 840
Net saving	\$ 8,880

Proper packing and sealing a silo prevents dry matter losses. What's more, valuable nutrients are preserved, improving animal performance. Stop losses by packing and sealing your silo.