

## Should You Cover Your Bunker Silo?

Proper covering of bunker silos can provide an 8:1 return on investment.

Everyone in the silage business acknowledges that sealing (covering) a horizontal silo (i.e., bunker, trench, or stack) is not the most fun job on the farm, nor does it usually receive the highest priority by many producers. Is it important to cover the bunker? Does it pay?

When silage is not covered, air and moisture can easily enter the silo and adversely affect both the ensiling process and the quality of silage during storing and feeding. This creates a great potential for excessive dry matter (DM) and nutrient losses, moldy feed and other problems. The extent of these losses in the top 2 to 4 feet, if there is no protection, is far greater than most people realize. Several studies at Kansas State University have reported at least a 30% loss in DM from the top 3 feet of silage in uncovered bunker silos versus bunkers covered with plastic sheeting weighted down with tires. In a 12' high X 80' wide X 140' long bunker, the top 3 feet of silage contains approximately 672 tons (as fed) of silage at a density of 40 lbs/ft<sup>3</sup>. Thirty percent loss in this top three feet would equal 201.6 tons of as fed silage. If wet corn silage is worth \$60 per ton, the total savings potential, in terms of lost corn silage is at least \$12,096. This does not take into account any negative effects that the top 3 feet of spoiled material might have on DM intake, milk production, or reproduction. Nor does it consider that additional silage is lost on the sides and closed end of uncovered bunkers. These losses can easily amount to 2-3% of the total silage volume. If we assume a 2% loss on the entire pile, this additional loss on our example would be 53.8 tons of silage worth another \$3,226.

Although future technology might bring a more environmentally and user-friendly product, polyethylene (e.g., 6-mil plastic) is currently the most effective covering material today. After it is placed over ensiled forage, the plastic sheet must be weighted down. Tires are the most commonly used weights, and they should be placed close enough together so they touch (about 20 to 25 tires per 100 sq. ft.). To reduce the number of tires needed, and water pooling inside the tires, tires should be cut in half and placed with the open side down. Cost of plastic is usually in the range of \$0.115 to \$0.120/sq. ft., or about \$1,344 (includes a 5% overlap) for a 12' X 80' X 140' bunker silo. If we assume it takes about 25 hours of labor at \$12/hour, the total labor is \$300/year. Initial cost of tires to cover this silo would run about \$250 to \$500, but must be spread over at least 10 years. If we assume \$350 initial tire cost with a 10-year expected useful life, this only amounts to \$35/year.

When you make all the calculations the total value of lost silage is \$15,322, total cost of covering is \$1,746, and the net benefit of covering equals \$13,575. This provides an 7.8 to 1 return on your investment which is exactly what Kansas State University researchers have reported. So this investment returns nearly \$8.00 for every \$1.00 invested; plus your valuable animals are not exposed to the potential toxins in the spoiled silage. If you can find any other activity paying that kind of return, please give me a call!! The bottom line is that sealing the exposed surface is one of the most cost effective management decisions in any silage program.

I have put together a simple spreadsheet model you can use to assess the cost:benefit of covering your bunker silo(s). If you would like a copy send me an e-mail requesting the "Bunker Silo Covering Model."

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