

Making Quality Silage Bales

by Jerry Clark

Introduction

Humid conditions during the summer in the upper Midwest can make it difficult to harvest good, quality, dry hay. Many dairy producers have turned to large bale silage as a method of harvesting their hay crop either as their main storage option or to store surplus hay. Putting up silage bales, or “baleage” as many producers call it, that will store longer with less dry matter loss is key to efficient harvest. Silage bales are easy to transport and make a flexible addition into most feeding programs.

What is the proper moisture for storing haylage as bales?

It is best to aim for moisture content between 40%-55%. This will create a condition for proper fermentation and longer-term storage when the bales are wrapped. Dry matter losses will be lower when harvesting at these moisture levels. However, many producers end up in a moisture range between 20%-35% known as “tough hay”. Bales in this range need to be wrapped to avoid high internal temperatures, which may lead to spontaneous combustion. Do not rely on preservative to reduce heating and mold without wrapping.

Should a preservative be used on silage bales?

Wrapping is preferred, if bales are intended to be used as silage, because it is more efficient. The main advantage plastic cover use has over preservatives is, though the cost is about the same, plastic wrapping can preserve bales over any moisture range. Preservatives can be used when moisture contents are below 25% and the hay is intended to be stored as dry hay. However, the cost of preservative for 25% moisture hay could be around \$15.00/ton.

How thick should plastic wrap be?

In a UW bale wrapping study, it was found that at least 6mil, preferably 8mil, of plastic wrap cover the bale. This can be accomplished by wrapping 6 times with 1ml plastic or 4 times with 1.5 mil plastic. With 4mils of plastic, oxygen was found leaking through the plastic to support continued microbial growth and spoilage. Total plastic thickness, not the number of wraps appears to be the most important factor to resist oxygen from reaching the feed. Line wrappers provide an opportunity to reduce plastic costs and wrapping time when compared to individually wrapped bales.

How quickly should silage bales be wrapped?

In another UW bale wrapping study, it was found that silage bales should be wrapped within 24 hours using 6-8mil thick plastic. Bales were wrapped at 12-hour intervals up to 96 hours after baling. Bales left unwrapped or wrapping delayed more than 48 hours exceeded internal temperatures of 130°F. These bales tended to have lower forage quality and greater mold throughout the bales.

How big can silage bales be?

An important factor to remember is to make bales the size and weight for the wrapper. Most wrappers have an optimum length for bales of 4 to 6.5 feet. If moisture in bales is quite high, these bales can be quite heavy. Heavier bales have more problems with plastic tears and holes while wrapping, stacking, and in storage. Bales weighing over 1400 pounds can be a problem. When handling large wrapped bales, use a bale grabber instead of a spear or device that penetrates through the plastic unless you plan to feed immediately. Since silage bales weigh more, be sure the transport equipment can safely lift and handle the bales.

How should silage bales be stored?

Stacking silage bales whenever possible has benefits. Stacked bales take up less space and help protect themselves from the elements, rodents, birds, etc. Stacked bales are also easier to check and manage. Be careful not to rip plastic when stacking. If equipment is not available to do a proper job of stacking without ripping plastic, then do not stack.

Silage bales should be placed on a smooth surface free of sharp objects or crop stubble. Mowing a grassy, well-drained area is a great place to store silage bales. Be sure the area is away from fence lines and other obstructions so feedout is not hampered.

Resources

Successful Wrapping and Storage of Square Bales; Dan Undersander and Tim Wood, University of Wisconsin and William Foster, Consultant

<http://www.uwex.edu/ces/forage/wfc/proceedings2003/squarebales.htm>

Large Baler Research and Storage Ideas; Ronald T. Schuler, UW-Extension Agricultural Engineer

<http://www.uwex.edu/ces/forage/pubs/BIGBALE1.htm>

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