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NEWS RELEASE PRELIMINARY FINDINGS OF UW SILAGE BAG STUDY TO BE RELEASED

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For Immediate Release

MADISON, WI— Preliminary findings of a silo bag study done by Richard Muck with the US Dairy Forage Research Center and Brian Holmes in the Biological Systems Engineering Department of University of Wisconsin-Madison will be released at the Arlington Field Day on June 27.

Because little research information is available on silage bags, the purpose of this study is to collect a host of information on these storage units. The information is to include the density of forage in silo bags, dry matter losses during storage, silage quality, filling rate of bag machines, and to determine the factors affecting dry matter density and dry matter losses in the silo bags.

Most of the information presented at the Arlington Field Day will be regarding dry matter losses during storage. These losses vary widely. This variance is primarily due to the silage bag being compromised. Of the 13 bags that have been emptied to this point, 2 saw extreme dry matter losses. Dry matter losses in these two bags were 30.6% and 38.2%. It is expected that timeliness of the repairs to the bags are a significant factor contributing to the amount of loss.

The average dry matter loss of the other 11 emptied bags was 8.5%. Of this 8.5%, 6.3% is gaseous and 2.2% is in spoilage. The average dry matter loss of all 13 emptied bags is 12.8%, of which 7% is gaseous and 5.8% is spoilage.

The reason for dry matter loss in the bags is yet to be determined. Density and feed out rate, two factors that were expected to be correlated to dry matter loss, have not proved to be important factors at this point. However, with only half of the study completed these factors may prove to play a vital role.

Previous results of this study were released in early December. The primary characteristic that was measured at that time was dry matter density. The average densities of each bagging machine and research station ranged from 11.0 lbs of dry matter/cubic foot to 14.6 lbs of dry matter/cubic foot. The low dry matter densities that were seen may mean that more bags and land area may be required to reach the total required storage space.

The average dry matter densities found in this study are below or slightly above

those recommended for use in bunker silo storage. So, we might expect to see significant dry matter losses in these bags. However, due to the oxygen limiting nature of plastic the study results in dry matter losses that correlate more closely to those of tower silos.

The dry matter density did not strongly correlate to load weight, filling rate, bag diameter, or dry matter content. The closest correlation was with dry matter content, but its correlation factor (r_2) was only .17, with perfect correlation being $r_2=1$. So, predicting a bags capacity may be a difficult task and strongly related to operator's actions.

Filling rates were also released in December. Again, these numbers were somewhat inconclusive and were likely tied to the operator's ability rather than moisture percentages or other factors. The maximum amount of haylage filled in any one hour was at a rate of 132 tons/hour of forage at 47.5% dry matter or 62.8 tons of dry matter/hour. However, the average filling rate for haylage fell to 42 tons/hour of forage at 47.5% dry matter or 19.9 tons of dry matter/hour.

As expected the filling rates were higher for corn silage than haylage. The maximum delivery rate of corn silage achieved in any one hour was 167 tons/hour at 38% dry matter or 63.8 tons of dry matter/hour. The average filling rate for corn silage fell to 84.2 tons/hour of silage at 38% dry matter or 32.0 tons of dry matter/hour.

While the results of this research are only preliminary, they do offer some insight into a new area of forage storage. It can be seen that this method of storage is variable in filling rates, dry matter density, and particularly in dry matter losses. As with many farm operations, all of these factors may be strongly influenced by the operator's actions. Future results should make this study more conclusive