

- New Forage Research Center Study
- Evaluating Lifetime Value



USDA Forage Research Center – Prairie du Sac, WI

Cows Produce More Milk Fat and FCM in First Phase of USDA Forage Research Center Study

Harvestore has built its reputation on providing herds with superior feed quality. For years, dairy producers using Harvestore’s oxygen-limiting technology have seen the freshness of the silage coming from the unloader, the limited spoilage and dry matter loss, and the high palatability that usually results in greater cow consumption and dry matter intake.

BUT HOW DOES NUTRIENT VALUE COMPARE among alfalfa ensiled in an oxygen-limiting silo versus a sealed plastic bag or a covered concrete bunker? And most importantly, how does nutrient variability of forages affect milk production and milk components?

Those were the questions behind a new on-going study being conducted by the USDA Forage Research Center in Wisconsin.

“We are undertaking an intensive investigation of the three major ways of storing silage in Wisconsin,” says Dr. Neal Martin, Director of the Forage Research Center. “It has been awhile since these studies have been done, and we now have new, more advanced forage tests available to us to do complete forage analyses. This study is somewhat unique in that it carries alfalfa feed quality through to cow feed intake and its effect on milk production.”

Preliminary results of the two-year study to be completed in 2006 were announced at the 2005 World Dairy Expo in October in Madison, Wisconsin.

The results so far? – **A 5.7 pound per head per day increase in 3.5 percent fat-corrected milk from Holsteins fed alfalfa ensiled in an oxygen-limiting Harvestore versus a plastic bag or concrete bunker.**

The only variable in the lactation trial, which divided 42 Holstein cows into three groups of 14, was the source of the ensiled alfalfa – cows received identical TMRs. Each group was fed a total mixed ration containing alfalfa silage from the oxygen-limiting silo, plastic bag or concrete bunker storage system. The cows were adapted to

each ration for three weeks, after which samples were recorded daily for milk volume, fat, protein and solids, along with feed intake.

Cows fed from the oxygen-limiting silo produced 91.9 lbs/head/day of FCM; cows fed from the bag silo 86.0 lbs/head/day FCM; and cows fed from the concrete bunker 86.2 lbs/head/day FCM, Dr. Martin says.

There was no significant difference among the three groups in dry matter intake, protein or total milk volume. Data on dry matter losses from the three systems is not completed yet, Dr. Martin adds.

Second cutting harvest of the alfalfa was made at recommended moisture ranges of 60 to 65 percent moisture for the bunker and bag, and 50 to 55 percent moisture for the Harvestore. All alfalfa was sprayed with a commercial silage inoculant.

All three silos were opened and emptied at the same time after more than 270 days of storage. The bag silo was opened from the end containing the first load so that silage from similar field locations was fed concurrently from the bag and oxygen-limiting silos. Average feed out rates

Cows fed ensiled alfalfa from an oxygen-limiting silo produced at least 5.7 pounds per head per day of 3.5 percent fat-corrected milk (USDA Forage Research Center, 2005).



Dr. Neal Martin

were at or above recommended levels, determined by the time it takes to empty each structure. All three silos were emptied between 120 and 150 days, according to Dr. Martin.

The time spent filling and sealing each silo was also recorded by the Forage Research Center. The fill rate for the 2004 cutting was 24.3 tons as fed per hour for the oxygen-limiting Harvestore, 25.7 tons per hour for the bag and 29.5 tons per hour for the bunker. It took 73, 91 and 240 tons of alfalfa to fill the oxygen limiting, plastic bag and bunker, respectively.

Results from a second harvest season (2005) have not been summarized. Final results of the study will be released in late 2006. The subsequent research paper will be submitted by the Forage Center for publication.

Effect of Silage Source on Intake & Milk Yield

Variable	Bag	Bunker	Oxygen Limiting	P>F
DMI, lb/d	53.1	52.9	52.9	0.93
Milk, lb/d	86.4	86.6	87.5	0.60
Milk, DMI	1.63	1.64	1.67	0.10
3.5% FCM, lb/d	86.0 ^b	86.2 ^b	91.9 ^a	<0.01
BW Gain, lb/d	0.40	0.73	0.93	0.13

^{a,b} (P=0.01)



Evaluating the Lifetime Value of Bags, Bunkers and Harvestores

When comparing a Harvestore to bags and bunkers, our prospects and customers are often asked to evaluate the lifetime value of each storage option. The initial cost to build a new Harvestore is a capital investment that can lead dairy producers to think a Harvestore is too expensive to operate. However, when all of the actual and “invisible costs” such as dry matter losses of these storage options are weighed, the dollar figures will often show that a Harvestore is less expensive to operate over time than any other option.

Consider the sum of these expenses over time for bags and bunkers:

- Diesel fuel costs for filling and packing bags and bunkers
- Diesel fuel costs for unloading bags and bunkers
- Tractor wear and tear from filling, packing and unloading
- Dry matter losses from spoilage and other environmental factors (i.e. birds and rodents) from 12 to 25%
- Replacement bags, bunker covers and tires
- Manpower and time requirements for filling, packing and unloading bags and bunkers

Conversely, Harvestore expenses over time include:

- Diesel fuel costs to run the silo blower
- Tractor wear from filling
- Electricity costs for the Alliance unloader
- Dry matter losses from spoilage from 3 to 5%
- Annual maintenance costs for the Alliance unloader
- Manpower and time requirements for push-button unloaders controls

In many cases, the actual and invisible costs associated with bags and bunkers can add up to more than a Harvestore over the life of the storage unit. To help producers assess the individual costs associated with each structure, Harvestore has developed **StoragePro™ feed storage analysis software**. A StoragePro™ demonstration can help producers evaluate their own actual and invisible costs in order to compare each storage option. Contact your local Authorized Harvestore Dealer for a StoragePro analysis today.

We'd Like Your Comments...

Have you had success designing rations around forage stored in a Harvestore? We'd like to hear your story and possibly feature it in an upcoming issue of *Harvestore Today*. Email us your experience or other comments to jgarnett@cstindustries.com for a chance to win an iPod shuffle. One winner picked with every issue of *Harvestore Today*.



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