Dairy News

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Baleage: the Good, the Bad, and the Ugly

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Baleage is silage usually made in large round bales and stored in airtight stretch wrap (plastic). Unlike haylage, baleage is not chopped prior to ensiling. It is baled at 50-60 % moisture compared to about 15% moisture for hay. Since ryegrass and other spring-harvested forages often contain more than 80% moisture, drying time for baleage is considerably less than for hay. Bales may be individually wrapped in plastic or butted on end and stretch-wrapped to form long tubes. Making baleage in tubes is generally faster and requires less plastic than individual wrapping, but individually wrapped bales can be easily transported which permits use of rental land to make baleage and allows baleage to be sold as a commodity similar to hay.

What are advantages of baleage over hay?

Reduced drying time for baleage production greatly reduces rain-related field losses compared to hay. For example, making high quality ryegrass hay often requires 4-6 days of drying compared to 1-2 days for baleage. Rain damage lowers forage harvested/acre and leaches soluble nutrients, particularly sugars, from grasses which reduces feeding value. The ability to harvest ryegrass earlier in the growing season is a key advantage to baleage production. This allows the producer to harvest ryegrass at the optimum stage of maturity (boot to early head stages) when nutritional value is high. High nutritional value of stored forage increases animal performance and reduces feed costs. Conversely, allowing ryegrass to grow into May and June before harvesting at the mature seed stage usually generates a low quality hay that does not support high milk production. Not only is forage less susceptible to rain damage with baleage, but nutrient recovery from the standing crop is usually greater since the need for tedding (fluffing) the forage is reduced. Reduced tedding also translates to savings in fuel and labor. Another advantage of baleage is reduced storage and feedout losses. Past research at this unit indicates that storage and feedout losses may exceed 50% of initial weight for ryegrass hay stored outdoors for a 7-month period. In contrast, well-managed baleage storage and feeding losses rarely exceed 10%, a value comparable to barn-stored hay.

What are the disadvantages of baleage compared to hay?

Increased capital and labor costs are required for the baleage system. Bale wrappers range in cost from a minimum of $3,000 dollars to a maximum of $20,000, costs vary with capacity and degree of automation. Plastic costs (stretch wrap) range from $2.50 to 5.00 per bale depending on bale size, type of wrapping machine, and the number of layers of plastic used to seal the bale. Applying the plastic increases labor costs about $0.50 per bale and a certain amount of time and effort is required to properly dispose of plastic from wrapped bales.

What's involved in making baleage that is high quality, well preserved, and palatable?

The nutritive value of any stored forage is dictated to a large extent by the chemical composition of the initial crop. The storage process, whether as hay, haylage or baleage, simply attempts to retain as near to 100% of the standing crops nutritive value as possible. Factors that affect nutritive value of the standing crop are forage type, fertility standing crop are forage type, fertility, growing conditions, and stage of growth at harvesting. When crops are stored as silage, plant sugars are fermented by bacteria to produce organic acids. The desirable bacteria form lactic acid from plant sugars which lowers the pH of the ensiled material and inhibits growth of undesirable bacteria, molds, and fungi. Undesirable bacteria (primarily clostridia types) produce acetic, propionic, and butyric acid, which are not as effective in lowering silage pH as lactic acid. As a result, there is a waste of plant sugars, a concentrating of fiber, and a breakdown of plant proteins. Baleage in which these undesirable bacteria predominate is poorly consumed and digested by cattle and animal performance is often below expectations.

What management decisions favor good silage bacteria and ultimately lead to successful baleage production?

When selecting a crop to use in baleage production, consider yield and related production cost per ton, quality (protein and energy content), and sugar concentration. Generally, crops high in quality are also high in sugars. Annual crops such as ryegrass and sorghum tend to be higher in sugars than perennial forages such as bahiagrass and bermudagrass. Since baleage is not chopped, access to sugars for bacterial fermentation is limited, therefore requirements for successful fermentation of baleage are probably higher. Boot to early head stage ryegrass and second cut sorghum

contain over 20% sugar and should ferment and store well as baleage. On the other hand, bermuda and bahia grass contain 8-12% sugars which is marginal for successful preservation as baleage. Although annual ryegrass is naturally a high sugar forage, concentrations do vary with stage of maturity. When ryegrass is young and leafy, sugar concentrations are lower than at seed head development stage, and as the plant becomes mature the amount available for making baleage declines dramatically. This may partially explain why late-cut ryegrass stored as baleage generally has a high pH and more mold than ryegrass harvested at the boot to milk stages of maturity. Not only are sugar concentrations low for mature ryegrass, but protein levels are low and fiber levels are high which greatly limits the feeding value of the resulting baleage. Low concentrations of sugars in young vegetative ryegrass emphasize the need to wilt grass to at least 50% dry matter to concentrate sugars for successful fermentation.

Based on our current knowledge, what are the best management practices for successful baleage production?

1) Select forages for baleage production that are high in nutritive value, contain adequate concentrations of sugars, and are high yielding. (Ex. Ryegrass, oats, and crabgrass)
2) Graze or clip pastures (3-4 inches in height) and top-dress with 50-75 units of N fertilizer.
3) Harvest forage in the optimum stage of maturity for high quality and yield (boot to early head for ryegrass).
4) Allow forage to dry in the field until forage dry matter reaches a minimum of 35%, preferably 40-60%. Bales containing less than 30% dry matter should be fed within 2-3 months.
5) Make certain that your baler is capable of handling high moisture forages. Add a baleage kit to your baler if rollers wrap with wet forage. Bale at ground speeds that allow production of dense bales.
6) Use untreated sisal twine or plastic twine to tie bales.
7) Wrap bales within 2 hours of baling with 4 layers of stretch film. Use 6 layers for long-term storage or high dry matter bales.
8) Use high UV inhibitor stretch film for bales stored through the summer months.
9) Handle individually wrapped bales with custom bale grabbers, cradles, or squeezes that allow maintenance of plastic integrity.
10) Repair small tears with postal tape. Feed poorly wrapped bales or bales with large tears within 2-3 weeks.
11) Store bales on a clean, well-drained site. For long-term storage consider storing individual bales on end.
12) Consider use of microbial/enzyme inoculants for low sugar crops such as bermudagrass.

When making baleage for the first time, cut a small acreage down to become familiar with the drying rate of the crop, baler capabilities, and to make certain that the bale wrapper is working properly. Avoid cutting down more forage than can be baled and dried at optimum dry matter contents. Consider using the services of a custom wrapper to determine the feasibility of baleage for your operation.

If I follow these best management practices, will the baleage system improve the profitability of my cattle operation?

No one can answer this question with certainty. According to our calculations, storing forage as baleage will increase costs $15 to $25 per ton (dry weight) over conventional outdoor stored hay. To recuperate higher costs affiliated with baleage, a producer must lower field losses, reduce storage losses, reduce feed costs or improve animal performance. If losses due to rain are minimal and the farm already has adequate indoor hay storage facilities, the first two economic advantages are negated. However, if a producer makes good quality hay, but has no indoor storage, reducing high storage losses can offset a large portion of the increased costs. Likewise, if a dairy producer makes high quality baleage he likely will be able to feed less grain of lower protein concentration which will offset baleage production costs; however adjustments to grain feeding and potential savings can only be realized when baleages are analyzed through a forage quality laboratory. Feeding higher digestibility baleage should also enhance intake and stimulate milk production of dairy cows.

(Taken from MS/LA Dairy Management Conf. Proceedings)

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NOVEMBER 2000 HONOR ROLL HERDS**

DAIRY	COUNTY	NO. COWS	LBS. ECM	2X 3X	Rolling Herd Average MILK	FAT	PROT	DOT
DIXIE DAIRY SALES	CARROLL	327	82.4	2X	20421	966	611	11/28
DAVID ROBINSON & SONS	RANKIN	141	62.6	2X	19831	689	599	11/27
HERITAGE DAIRY	TATE	431	62.1	2X	23669	981	744	11/13
RONALD H CLARK	LINCOLN	79	61.8	2X	21650	796	692	11/28
MS.STATE UNIVERSITY	OKTIBBEHA	183	60.7	2X	22970	884	742	10/31
NEAL & TINA SMITH	NOXUBEE	103	59.4	2X	17118	626	529	11/29
COASTAL PLAIN EXP STA	NEWTON	172	57.7	2X	22398	791	692	11/20
CAL MAINE FOODS DAIRY	HINDS	1649	57.0	3X	20397	741	622	11/18
MS.STATE UNIVERSITY	OKTIBBEHA	183	56.5	2X	23024	894	740	11/28
ROWZEE JERSEY FARM	NEWTON	156	55.9	2X	17327	819	653	11/20
J & L DAIRY	WALTHALL	218	55.1	2X	21543	798	677	11/27
NORTH MS BR EXP STA	MARSHALL	115	52.9	2X	22275	753	697	11/06
G & B DAIRY	LINCOLN	80	50.6	2X	17678	714	638	10/30
MELVIN NICHOLSON	NEWTON	118	50.3	2X	23300	820	755	11/15
TURNIPSEED DAIRY	MONROE	434	50.0	2X	19804	734	607	11/18
A L BOYD JR	WALTHALL	76	49.9	2X	21676	653	663	11/28
DAVID ROBINSON & SONS	RANKIN	134	49.0	2X	19512	678	592	11/01
BRAD BEAN	AMITE	230	48.4	2X	21600	801	673	11/09
DANNY WALTER SISCO	LINCOLN	102	47.1	2X	19334	608	586	11/13
BUFORD PIGOTT & SON	WALTHALL	139	46.1	2X	14135	537	470	11/20
JOHN T MCREYNOLDS	OKTIBBEHA	121	44.8	2X	17414	568	541	11/08
MILTON & TERRY JEFCOAT	JONES	192	42.2	2X	20459	672	656	11/01
JAMES & MARY ALFORD	LEAKE	120	42.2	2X	12738	449	396	11/04
RAY GALLOP & SONS	MONROE	68	41.4	2X	17954	620	550	11/08
LARRY WALKER	NOXUBEE	96	40.7	2X	16482	577	514	11/15

Top 25 herds enrolled on supervised DHIA testing programs by test day energy corrected milk for all cows.
**ECM = (.3246 x test day milk) + (12.86 x test day lbs. fat) + (7.04 x test day lbs. protein)

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Upcoming Events

January 18: Milk Management Workshop
Gillsburg, MS
Contact Richard Hay (601) 657-8937

February 1-3: Dixie Junior Round-Up Dairy Show
Jackson, MS.

February 5-6: Southern Dairy Conference
Atlanta, GA.

February 12: Hoof Care and Trimming Clinic
Southwest Event Center-10:00 a.m. registration
Tylertown, MS.
Contact Lamar Adams (601) 876-4021

*February 20: Mississippi DHIA and Mississippi ADA Annual Meeting
Mississippi Farm Bureau Federation Building
* Please note that this meeting will now be held on **February 20** instead of February 15.

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Prices of Dairy Cattle Replacements

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Dairy Economist, MSU

Dairy cattle prices have been creating great interest during the past 18 months because of the expansion of U.S. dairy herds during late 1999 and 2000. The Agricultural Marketing Service (AMS) collects dairy replacement prices for several locations across the U.S. The prices reported are for the Blansit, Missouri and Thomasville, Georgia auction markets. This information should provide some insights about the market value of dairy heifer and cow replacements. The prices at Blansit (southeast Missouri) represent the auction held on November 14 while the Thomasville (southern Georgia) prices were for the November 20 sale. At Blansit, the reported prices for Springer Heifers (2 to 4 years, 5 to 8 months bred) ranged from $1,200 to $1,240 for Supreme; $1,070 to $1,100 for Approved; and $690 to $800 for Common grade animals. Springer Cows were $1,140 for Supreme; $900 to $1,000 for Approved; and $550 to $600 for Common grades. At Thomasville, Springer heifer prices ranged from $1,490 to $1,610 for Supreme; $1,260 to $1,430 for Approved; and $440 to $700 for Common grade animals. Fresh milking cows (2 to 5 years) were $1,600 to $1,810 for Supreme; $1,300 to $1,580 for Approved; and $510 to $770 for Common grades. Please provide your input to this author as to how best report dairy heifer and cow price statistics.

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November 2000 Advanced Class I Price

Dr. C. W. "Bill" Herndon
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Class I Milk Price Increases 31Cents to $15.23 per cwt.

Dairy farmers, especially those in Federal Milk Order areas with high Class I utilization rates, continue to benefit from the USDA's implementation of Federal Order reform on January 1, 2000. The provision of using the higher of either the Class III or Class IV advanced skim milk price as the base price for establishing the Class I milk price has realized additional milk sales revenues to Mississippi producers. For example, the USDA reports that the Advanced Class III Skim Milk price is $4.14 per cwt. compared to the Advanced Class IV Skim Milk price of $7.75 per cwt. for December. This $3.61 per cwt. difference between the Class III and Class IV prices (after factoring in the butterfat price) resulted in a $3.49 per cwt. *higher* Class I base price. The USDA announced that the December 2000 Advanced Class I "base" milk price was $12.13 per cwt. (for 3.5% butterfat milk). After adding the $3.10 Class I price differential for the pricing zone (Atlanta and Starkville) to this "base" price, the Advanced Class I milk price for December will be $15.23 per cwt. and represents an INCREASE of $0.31 per cwt. This Advanced December Class I price is $0.66 per cwt. (or +4.5%) MORE than the December 1999 Class I price of $14.57. Dairy producers need to remember that the December Class I price will be the most important factor that will influence the revenues from the sale of milk produced during December.

Market Conditions.

While cheese and butter prices have improved, the market outlook for dairy product and milk prices still looks very bleak for the next 6 – 9 months. Excessive milk supplies continue to overpower the very bright prospects of increasing dairy product demand. Cheddar cheese prices have displayed improvement during October after falling to their lowest levels since 1978. The November Class III milk futures contract price is expected to plummet and be reported below $9.00 per cwt. for the first time since January 1978. The seasonal Thanksgiving and Christmas upsurge in dairy product demand has not been able to offset the unrelenting "flood" of milk being produced. The USDA's October 31 Cold Storage report indicates that inventories of butter were 10% less and natural cheeses were 10% greater than October 1999 compared to 10 to 30% less than September 2000 totals. Despite these depressing market conditions, the Class I milk prices have remained remarkably stable during 2000 because butter prices have reinforced and sustained milk prices near the Class I base price of $12.00 per cwt. During the third week of November, Florida bottlers imported 94 loads into the state compared to only 26 during the previous week and 71 for the same week of 1999. Other handlers in the Southeast shipped in an additional 50 truckloads (from the Midwest) compared to 54 loads during the previous week and 28 a year ago. Most of the dairy industry expects the Class III milk prices to fall below the $9.00 per cwt. level for the first time in almost 23 years and are predicting that the Class III price will not to reach $10.00 until the summer of 2001. However,

butter prices should continue to stay above the $1.00 per lb. through most of 2001 and this should sustain Class I milk prices near their current levels through the first half of 2001.

Milk Production.

The past 12 to 14 months has witnessed unprecedented increases in the number of milk cows in the U.S. that has caused an unrelenting onslaught of burdensome milk supplies. These supplies have forced milk prices to levels not experienced in over 20 years. Milk producers have yet to react to these low milk prices by decreasing the number of cows. The effects of record high milk prices experienced during 1998 and 1999 seem to be overshadowing these dismal current market conditions. Farmers have increased the number of cows in their herds. Thus, national milk production increased 2.9% (or 394 million lbs.) between October 1999 and October 2000 where 101,000 more cows (2,000 more than September 2000) were milked yielding an average of 26 (+1.8%) more lbs. per cow. Comparing the October 1999 vs. 2000 data, (for the 20 states that the USDA reports monthly data) 17 states recorded increases or the same level output while 3 states (Virginia, -4.4%; Arizona, -3.0%; and Minnesota, -0.3%) noted a decrease. Of the 20 states, 3 states recorded double-digit increases in October-to-October output. Indiana registered an 18.4% upsurge followed by New Mexico (+12.6%) and Idaho (+10.5%). Two of the three southeastern states recorded increases between Octobers (Kentucky up +4.5% and Florida up +8.8%). Financial stress has begun to result in herd dispersal sales in some areas, so it appears that farmers are beginning to reduce the number of dairy cows. The difficulties caused by very low milk prices are also affecting Mississippi and southeastern dairy producers who are considering ways to manage cash flows. With a continuation of low feed prices and favorable weather conditions, milk production is not expected to decline enough during the next 6 – 8 months to improve milk prices and farm revenues. Nevertheless, an extremely harsh winter could alter this situation quickly and cause a quick reversal in the current demand and supply situation pushing up dairy prices. However, excessive milk supplies are expected to trouble the dairy industry and cause a continuation of very low milk prices through the reminder of 2000 and most of 2001.

Dairy Product Prices.

Early November was a pleasant surprise with dairy product prices increasing for both butter and cheese. The most amazing market event was Grade AA butter prices skyrocketing up almost 60% on the Chicago Mercantile Exchange (CME). Cheddar cheese prices have almost trended upward and approached the USDA support levels of $1.12 per lb. and $1.09 per lb. for 40# block and 500# barrels, respectively. Very tight supplies of cream used in processing butter have driven the upsurge in butter markets. Recent improvements in cheese prices have been attributed to processors packaging products to satisfy the requirements for selling to the USDA. Butter prices shocked the industry in November by soaring up more than $0.65 per lb. due to strong holiday demand. Adding to this positive market is the recent USDA's cold storage holdings report that indicated decreases in both butter and American cheese inventories from September to October 2000. On the CME, 40# block prices were reported at $1.02 on October 27 and increased to $1.10 on November 20. Barrel cheddar prices had a similar occurrence during November where the CME reported a cash price for 500# processed barrel cheddar cheese of $1.00 per lb. on October 27 compared to $1.07 on November 20. The butter market continues to absorb large quantities of milk to supply the demand for fresh and frozen butter. On October 27, the Grade AA butter price was $1.14 per lb. compared to $1.80 on November 20. As usual, no movement was recorded on the CME for Grade A nonfat dry milk (NDM) price which has remained constant at $1.03 per lb. since September 1999. Government purchases of non-fortified and fortified NDM totaled 8 to 9 million lbs. per week during November compared to more than 400,000 lbs. of cheeses purchased November 13-17.

Near-term Market Outlook.

Despite the recent upsurge in butter prices, excessive milk supplies continue to drive down dairy product and milk prices. Therefore, the price outlook for reminder of 2000 and first half of 2001 remains very pessimistic with a period of financial stress facing dairy farmers across the South. Cheddar cheese prices have been surrendered to the "flood" of raw milk and the November Class III price is expected to fall to 23 year lows. Butter remains as the only flicker of hope in this dreary economic situation for milk producers. As the holiday season comes to a close, the butter market could reverse itself and force butter and Class I milk prices down rapidly and significantly. Despite this weakness, Class I milk prices are expected to remain stable and increase slightly during January 2000. But if the butter market collapses in December, Class I prices will suffer a similar fate that is anticipated for Class III (less than $9.00 per cwt.) in November. Therefore, the January Advanced Class I milk price for Mississippi (Starkville zone) should increase about $0.25 per cwt. and be reported near the $15.50 level. The November Class III is also expected to decrease about $1.20 below the October price and be reported near $8.75 per cwt. The CME reported on November 20 that the Class III futures contracts settlement prices were $8.76 for the November contract, $9.54 for December, $9.65 for next January, and $9.85 for next February. Caution needs to be used when using these predictions because the past 10 to 15 years has clearly shown that

there are tremendous amounts of uncertainty and price volatility existing in dairy markets. Therefore, all dairy farmers must use great caution when using price forecasts.

Class IV and Butter Prices Have Resulted in More Revenues for Dairy Farmers

Under the "revised" classified milk pricing system, butter prices have been allowed to have more influence on dairy farm revenues and incomes. Today, the prices of ***both*** cheese and butter have an equal chance to influence fluid milk prices and the "higher of" either the Class III or Class IV price is used as the base for Class I milk prices. For the December "Advanced" Class I price, there was a $3.61 per cwt. difference between the Class III and Class IV Advanced Skim Milk prices and the Class I "mover" used the higher of these two prices. Thus, the Class IV skim price of $7.75 was used to calculate the December Advanced Class I price of $15.23 per cwt. (Starkville and Atlanta zone). So, this Class I "mover" price feature continues to produce significantly more milk sale revenues for Mississippi dairy producers.

The strength of butter prices (and the subsequent increased value of butterfat) has been the only glimmer of optimism in the 2000 dairy market. The revised classified milk pricing system employed under federal order reform is currently allowing dairy farmers to continue to realize additional revenues from milk sales due to the relatively higher butter prices experienced during this year. This is particularly true for dairy farmers in Mississippi and the South where more than 60 % of the milk is used in Class I dairy products. This "higher of" aspect of Class I pricing has begun to cause farmers in the Upper Midwest and other areas of the U.S. to look jealously toward the Southeast and complain about how this "new" Class I pricing scheme is harming their dairy operations. So, dairy producers should not be shocked when farmers outside the Southeast start offering proposals to change the current "higher of" method for pricing Class I milk.

Southeast F.O. #7 "Blend" Price Declines 27 cents to 13.89 in October

The Southeast Federal Order Milk Market Administrator reported the October 2000 "blend" or uniform price for milk delivered in the Atlanta and Starkville "base" zone of Federal Order (FO) #7 was $13.89 per cwt. for 3.5% butterfat milk. The October "blend" price of $13.89 for the "base" zone of FO #7 represents a DECREASE of $0.27 per cwt. (-1.9%) compared to the September price of $14.16. The October 2000 blend price is $4.07 per cwt. (or –22.7%) BELOW the October 1999 blend price of $17.96. Average butterfat test and price in each of the 4 milk class categories has a direct impact on the value of milk pooled in FO #7 and the amount of milk revenues available to be distributed to dairy farmers. For October, the butterfat price and average butterfat test for each milk class were: Class I, $1.26 per lb. and 2.2%; Class II, $1.25 per lb. and 8.0%; Class III, $1.24 per lb. and 4.5%; and Class IV, $1.24 per lb. and 8.6%. Factoring the average butterfat test with the lbs. of skim milk used in each of the 4 milk classes provides what will be described as the "net" milk price for each class of milk. The October "blend" price of $13.89 per cwt. was determined by: (1) a "net" Class I price of $13.28 on 66.3% of milk marketed; (2) the "net" price for Class II of $17.54 on 11.7% of the milk; (3) a "net" price of $11.38 on 15.1% of the milk used for Class III products; and (4) the "net" Class IV price of $19.43 on 6.7% of milk marketed. Because of the current relative "high" prices for butterfat, the "net" milk price for each class of milk reveals some rather surprising results.

Uniform or "BLEND" Price-October 2000

North Mississippi:	**$13.69**
North Central Mississippi:	**$13.89**
South Central Mississippi:	**$14.09**
South Mississippi:	**$14.19**
Coastal Mississippi:	**$14.29**

Class I Price - December 2000 (Advanced Price)

North Mississippi:	**$15.03**
North Central Mississippi:	**$15.23**
South Central Mississippi:	**$15.43**
South Mississippi:	**$15.53**
Coastal Mississippi:	**$15.63**