What is baleage?

Air tight, plastic wrapped, round or square bales of forage.

Consisting of:

• 4" to 5" fiber length (ideal for ruminants)

• 19% + crude protein

• 30% to 60% moisture level (45% is ideal)

• 175 + relative forage quality

• 65% total digestible nutrients
Baleage advantages vs dry hay

- Larger harvesting window/capture more nutrients
- Reduced feed losses
- Speed up harvesting
- Increased milk production and Average Daily Gain (avg)
- Lower feed and labor costs
- Healthier animals
POOR STORAGE PRACTICES CAN LEAD TO 44% REDUCTIONS IN FORAGE QUALITY

Spoiled Hay: 3” = 25%

Transition Zone: 9% Lower Dry Matter intake

Core Zone: 56% Higher Dry Matter intake

Reduced feed losses
Combined Harvesting & Storage Losses

- Penn State Univ
- Michigan State Univ
- Agricultural Research Service USDA

Today’s statistics due to improved technologies and processes

Field Loss | Storage Loss
---|---
Silage bale: 2% | 3%
Stave silo: 13% | 8%
Bunker silo: 21% | 15%
Dry bales: 25% | 20%
Dry hay field and storage loss studies reveal 25% waste

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMOUNT OF BALES NEEDED</td>
<td>400</td>
</tr>
<tr>
<td>BALES MADE</td>
<td>533</td>
</tr>
<tr>
<td>FIELD AND STORAGE LOSS (25%)</td>
<td>133</td>
</tr>
<tr>
<td>BALES LEFT AFTER LOSS</td>
<td>400</td>
</tr>
</tbody>
</table>

RESULTS: 533 BALES LESS 133 BALES LOST LEAVES YOU WITH 400 BALES

**Reduced feed losses**
# Faster harvesting time

<table>
<thead>
<tr>
<th></th>
<th>Baleage</th>
<th>Dry Hay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mowed</td>
<td>May 17th</td>
<td>May 20th</td>
</tr>
<tr>
<td>Tedded</td>
<td>n/a</td>
<td>May 20th</td>
</tr>
<tr>
<td>Raked</td>
<td>n/a</td>
<td>May 23rd</td>
</tr>
<tr>
<td>Baled</td>
<td>May 18th</td>
<td>May 23rd</td>
</tr>
<tr>
<td>Wrapped</td>
<td>May 18th</td>
<td>n/a</td>
</tr>
<tr>
<td><strong>Results</strong></td>
<td><strong>10.9 min/bale</strong></td>
<td><strong>22.8 min/bale</strong></td>
</tr>
</tbody>
</table>

Note: tedded and raked twice.

**Speed up harvesting**
# Faster harvesting = savings

<table>
<thead>
<tr>
<th></th>
<th>Number of bales for equivalent Dry Matter</th>
<th>Time per bale</th>
<th>Total Hours</th>
<th>Tractor Cost/Hour ($0.26/hour/HP)</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Dry Bales</em></td>
<td>533</td>
<td>22.8 min.</td>
<td>202 hrs.</td>
<td>100HP/hr. = $26</td>
<td>$8282</td>
</tr>
<tr>
<td><em>Baleage</em></td>
<td>400</td>
<td>10.9 min.</td>
<td>73 hrs.</td>
<td>Labor Cost/hour= $15</td>
<td>$2993</td>
</tr>
</tbody>
</table>

**Baleage Tractor and Labor Savings** $5289

*Based on a farm needing 400 bales/year*
## Baleage economy vs dry hay

### Harvesting Time
- **Dry Bales**: 202 hrs.
- **Baleage**: 73 hrs.

### Number of bales
- **Dry Bales**: 533
- **Baleage**: 400

### Dry Bale losses (25%) at 30$ per bale (133 bales)
- **Dry Bales**: $3990
- **Baleage**: $0

### Plastic costs ($3/bale)
- **Dry Bales**: $0
- **Baleage**: $1200

### Tractor and Labor costs
- **Dry Bales**: $8282
- **Baleage**: $2993

### Total Cost
- **Dry Bales**: $12272
- **Baleage**: $4193

*Based on a farm needing 400 round dry bales/year

---

**SAVE $8079/YEAR**

**PAY FOR YOUR WRAPPER IN 3 YEARS**

**Speed up harvesting**
WHEN TO CUT YOUR CROP?

HARVEST DURING THE VEGETATIVE STAGE

CHOOSE YOUR GROWTH PATTERN FOR:

- OPTIMUM FEED VALUE
- GREAT RESALE VALUE
- TIME FOR EXTRA CROP

Larger harvesting window/capture more nutrients
Effects of stage of harvesting on hay quality and animal gain.

*Holstein heifers were used, average weight: 500 pounds. Source: Monty Montgomery, University of Tennessee.

<table>
<thead>
<tr>
<th>Stage of harvest</th>
<th>Dry Matter Intake lbs./day</th>
<th>Percentage of digestibility</th>
<th>Percentage of protein</th>
<th>Pounds of hay fed per lb. gained</th>
<th>Pounds of hay per acre, 1st cut</th>
<th>Pounds gained per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Late boot to head</td>
<td>13.0</td>
<td>68</td>
<td>16.8</td>
<td>10.1</td>
<td>1334</td>
<td>1.39</td>
</tr>
<tr>
<td>Early bloom stage</td>
<td>11.7</td>
<td>66</td>
<td>10.2</td>
<td>13.5</td>
<td>1838</td>
<td>.97</td>
</tr>
<tr>
<td>Mature stage</td>
<td>8.6</td>
<td>56</td>
<td>7.6</td>
<td>22.5</td>
<td>2823</td>
<td>.42</td>
</tr>
</tbody>
</table>

Increased milk production and Average Daily Gain (ADG)
# FORAGE QUALITY=$$$

<table>
<thead>
<tr>
<th>Forage Quality</th>
<th>Protein</th>
<th>TDN</th>
<th>Lbs./Milk/Ton</th>
<th>Lbs./Milk/Acre</th>
<th>$/Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>10%</td>
<td>49%</td>
<td>1894</td>
<td>11,364</td>
<td>$1,931.00</td>
</tr>
<tr>
<td>HIGH</td>
<td>17%</td>
<td>59%</td>
<td>2625</td>
<td>15,750</td>
<td>$2,677.00</td>
</tr>
<tr>
<td>DIFF</td>
<td>7%</td>
<td>10%</td>
<td>731</td>
<td>4,386</td>
<td>$745.00</td>
</tr>
</tbody>
</table>

*University of Wisconsin Milk 2000 based on forage production 6 tons/acre milk price $17.00/cwt*

**GOOD QUALITY FORAGE = 38% INCREASE IN MILK OR BEEF/acre!**
FEED REPRESENTS 2/3 OF OVERALL COST

To lower overall costs: LOWER FEED COSTS
How?

- Mowing
- Baling
- Hauling
- Wrapping
CUTTING HAY TODAY?

HOW MUCH DO I LOSE IF I WAIT ANOTHER DAY?
Mowing

- Young shoots
- New growth
- 3 to 4 cuts per season
- Mow 4" to 5" from the ground
- After dew
Perfectly shaped round bales

- Are easier to wrap
- Assure better baleage quality
- Eliminate potential waste

Even and dense bales

Uneven windrow width and shape leads to unevenly shaped bales

Even windrow width and shape leads to evenly shaped bales
Baling

- **RIGHT MOISTURE CONTENT**
  - baleage: 40% to 60%
  - dry hay: 20%

- **TIGHTLY PACKED**: OXYGEN SQUEEZED OUT
Baling Guidelines

A. Adjust baler density to its maximum allowable position. The baler is a packer.

B. Avoid use of excessive forward speed

C. Make even-shaped bales
Crop Management

• 20% - 30% moisture: apply more wrap

• 30 to 40% moisture: feed before 6 months

• 40 to 60% moisture: stores up to 1 year

• 60% + moisture: feed before 3 months
Carrying & Hauling

Denser bales make for less bales to transport and wrap

Bales should be removed from the field as soon as possible

With a self loading trailer this is a one-man operation

Self-loading trailers are 40% faster

SAVE TIME AND LABOR
Wrapping

- Within 6 hours of baling on average
- Wrap tightly with 6-8 layers
- Run rows North to South
- Consider in-line or individual wrapper
- Production yields:
  - 100 to 150 bales/hour with in-line wrapper
  - 40 to 45 bales/hour with individual wrapper

"Keep nutrients in, oxygen out."
Individual Bale Handling

Use only front or rear tractor mounted specialized handling equipment to transport wrapped bales.

Do not carry wrapped bales on a spike as it is impossible to reseal the bale.
Minimize damage to bales during storage and transportation.

Store bales:
- on a level, smooth surface free of vegetation and trash
- in a dry area for easy pick up in winter and wet periods
- close to feeding area
- avoid storage near woods or in remote areas

Label bales and map storage location.
TIPS

• Limit bale diameter to 54”
• Make bales as even as possible with square shoulders
• Wrap everything ASAP
• Use sufficient plastic to ensure a good oxygen barrier
• Poor quality plastic = poor results
• Maximize production, don’t take chances with feed
More Milk

“I switched, and milk production increased."

John Martwezak
Bentleyville PA
Dairy operation:
95 milk cows

“Rosy 3 times faster, and I cut down on fuel consumption, and got rid of a lot of costly equipment. Compared to chopped silage, I feed less grain and less supplement, save about 30%, and get 7% increased milk production.”
“We were feeding chopped silage from a bunker, I was losing a minimum of 15% of feed and the quality wasn’t there. Since feeding baleage, we have increased the butterfat content in our milk. By baling myself, I gain in production and feed quality.”

Kevin High
Wolcott NY
Dairy operation:
140 milk cows

“I switched, and got higher butterfat content.”
More Beef

“I switched, and my herd now has more daily weight gain.”

Ernie Haehnel
Motley, MN.
Beef producer:
200 head herd

“The quality of the feed helps reduce the cost of mineral and supplement. My herd maintains a better body condition score, and the cows are breeding back more easily.”
WHAT IS HIGH MOISTURE BAGGED CORN?

Rolled, shelled corn packed in an airtight plastic bag at 25% to 40% moisture content.
ADVANTAGES

• No drying required
• No transport costs
• Can be harvested earlier
• Bag a complete trailer (35 tons) in 1 hour
• Low capital investment
• Unlimited storage options
• Limited risk of loss
MORE ADVANTAGES

• Easier to market (no time constraints)
• Less expensive than dry corn
• Be more self sufficient in grain supplies
• High moisture rolled corn is easily digested, therefore, gives higher protein levels and energy value than dry corn
BEST FEEDING SYSTEM

• Baleage combined with High Moisture Rolled corn is the perfect blend of fiber, protein and energy

• Baleage and High MoistureRolled Corn is the least costly feeding program today
HERE’S HOW WE DO IT...

• Bag must be at least 8mm. thick
• Store on high ground, level surface with good drainage
• Run rows North to South
• Adjust hydraulic brakes to assure high compaction to keep air out
• For ideal stretch, keep an eye on the bars on the bag
**FEED COSTS**

DAIRY RATION IS $400/TON  
FARM BLEND IS $297/TON

**FARM BLEND CONSISTS OF:**
70% HIGH MOISTURE CORN + 26% ROASTED SOYA BEANS + 4% MINERAL PREMIX
AND HAS EQUAL OR HIGHER PROTEIN AND ENERGY VALUE THAN A 16% DAIRY RATION

<table>
<thead>
<tr>
<th></th>
<th>FARM BLEND</th>
<th>DAIRY RATION</th>
<th>SAVINGS/TON</th>
</tr>
</thead>
<tbody>
<tr>
<td>H.M.C. ($200/TON)</td>
<td>1400 LBS.</td>
<td>$140</td>
<td></td>
</tr>
<tr>
<td>R.S.B. ($450/TON)</td>
<td>520 LBS.</td>
<td>$117</td>
<td></td>
</tr>
<tr>
<td>PREMIX ($1 000/TON)</td>
<td>80 LBS.</td>
<td>$40</td>
<td></td>
</tr>
<tr>
<td>TOTAL/TON</td>
<td>2 000 LBS.</td>
<td>$297</td>
<td>$400</td>
</tr>
</tbody>
</table>
## SAVINGS PER YEAR

DAIRY CATTLE CONSUME 3.75 TONS OF DAIRY RATION PER COW/YEAR, 25LBS. PER MILKING DAY

<table>
<thead>
<tr>
<th>DAIRY COWS</th>
<th>FARM BLEND</th>
<th>DAIRY RATION</th>
<th>TOTAL SAVINGS/YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>$55,687</td>
<td>$75,000</td>
<td>$19,313</td>
</tr>
<tr>
<td>75</td>
<td>$83,531</td>
<td>$112,500</td>
<td>$28,969</td>
</tr>
<tr>
<td>150</td>
<td>$167,062</td>
<td>$225,000</td>
<td>$57,939</td>
</tr>
</tbody>
</table>

FARM BLEND SAVES YOU $386 PER COW/YEAR

WITH 75 DAIRY COWS, PAY FOR YOUR GRAIN BAGGER IN 1 YEAR
### SAVINGS PER YEAR

BEEF CATTLE CONSUME 1/2 TON OF RATION PER HEAD/YEAR, BASED ON 5LBS./DAY FOR 200 DAYS

<table>
<thead>
<tr>
<th>BEEF CATTLE</th>
<th>FARM BLEND</th>
<th>RATION</th>
<th>TOTAL SAVINGS/YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>$14 850</td>
<td>$20 000</td>
<td>$5 150</td>
</tr>
<tr>
<td>150</td>
<td>$22 275</td>
<td>$30 000</td>
<td>$7725</td>
</tr>
<tr>
<td>200</td>
<td>$29 700</td>
<td>$40 000</td>
<td>$10 300</td>
</tr>
</tbody>
</table>

FARM BLEND SAVES YOU $51.50 PER HEAD/YEAR

WITH 100 HEAD, PAY FOR YOUR GRAIN BAGGER IN 6 YEARS
YIELD

- 200’ X 6’ BAG HOLDS 115 TONS
- MINIMUM DAILY GRAIN REQUIREMENT IS 286 LBS. TO KEEP GRAIN FRESH
- 286 LBS./DAY IS EQUAL TO FEEDING 60 BEEF COWS OR 12 DAIRY COWS