Minimizing Feeding Costs with Winter Grazing Systems

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Area Agronomy Specialist
Oklahoma State University
KFMA data shows “Feed” is 45-55% of annual cost of cow ownership.

An average winter daily cost will be $1.50 per cow per day:

- Feed = Forage + Hay + Supplement
- $35 1100 lb 4x6 bale - $0.032/lb @ 30 lbs = $0.96/c/d
- $240 ton by-product - $0.12/lb @ 4 lbs = $0.48/c/d

WASTE?
Average Snow Cover – 4 days

*Most introduced forage producers fed hay over 110 days
**75% of producers in more than 120 day bracket fed Nov1-Apr 15 (165d)
Why start with Bermuda?

Almost every producer in E OK has some Bermudagrass

I would guess 98% of those never manage Bermuda after Sept. 1

Remember the Low Hanging Fruit

- It’s already established
- Resilient
- Responsive to N
- Will meet a cow’s nutrient requirements
Forage Growth, Rainfall, and Fertilizer Timing

- **Bermudagrass**
- **Tall Fescue**
- **Rainfall**

**Fertilize Warm Season Grass**
- Jan: 0
- Feb: 0
- Mar: 0
- Apr: 2
- May: 22
- Jun: 20
- Jul: 24
- Aug: 19
- Sep: 14
- Oct: 14
- Nov: 10
- Dec: 10

**Fertilize Cool Season Grass**
- Jan: 2
- Feb: 0
- Mar: 0
- Apr: 5
- May: 15
- Jun: 8
- Jul: 22
- Aug: 19
- Sep: 8
- Oct: 14
- Nov: 10
- Dec: 8

**Fertilize Warm or Cool Season Grass**
- Jan: 0
- Feb: 0
- Mar: 0
- Apr: 0
- May: 0
- Jun: 8
- Jul: 0
- Aug: 0
- Sep: 8
- Oct: 6
- Nov: 4
- Dec: 3

**Legend**
- Orange line: Bermudagrass
- Green line: Tall Fescue
- Blue line: Rainfall

**Note:** The diagram illustrates the optimal timing for fertilizing warm season, cool season, and warm or cool season grass based on rainfall patterns.
Stockpiled Bermudagrass (Nov-Dec)
How do I stockpile Bermuda?

- **Stockpiled Bermudagrass**
  - First week of September
  - Remove existing forage to 2-3”
    1. Graze it!
    2. Bale it
    3. Clip it
  - Apply 50 to 75 lbs of N ($16.20-$24.45/A)
  - Expect 1 ton of forage per Acre
    - Soil potential and year may give 0.5-2 tons/A
  - Target grazing after frost when growth is complete (Nov-Dec)
  - Use It When You Need It!

1 acre = 45-60 grazing days for a 1200 lb cow
Tripping the Fall Stop Watch

1. Date that N is applied to field
   - Don’t wait on a rain!
   - We often miss good rains by waiting on a good rain
   - Research shows losses of urea N rarely exceeds 15%
   - You will lose more yield from shortened growth period than ammonia volatilization

N Source Effects On Yield
Kinta, OK 2005
Brian Pugh & Chris Rice

Statistically no significant differences!
2. Date that first $\frac{1}{2}''$ of rain falls
   - Moisture required to fully move N into root zone
   - Soil moisture alone will dissolve prills and cause a color change, but still need rain
   - Determines the onset of vigorous and high quality regrowth
Tripping the Fall Stopwatch

3. Date that frost occurs
   - The final word in total production
   - #1 factor affecting quality!
# Grazing Strategy Effects Forage Utilization

<table>
<thead>
<tr>
<th>Harvest Method</th>
<th>Low Efficiency</th>
<th>High Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous Stocking</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td>Slow Rotation (2-4 paddocks)</td>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td>Moderate Rotation (4-8 paddocks)</td>
<td>60</td>
<td>70</td>
</tr>
<tr>
<td>Strip Grazing, MOB, Daily, etc.</td>
<td>70</td>
<td>80</td>
</tr>
<tr>
<td>Hay Harvest</td>
<td>30</td>
<td>75</td>
</tr>
</tbody>
</table>

Converting from a continuous to a rotational stocking system.

<table>
<thead>
<tr>
<th>State Trials</th>
<th>% Increase StckRate</th>
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<tbody>
<tr>
<td>Arkansas</td>
<td>44</td>
</tr>
<tr>
<td>Georgia</td>
<td>37</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>35</td>
</tr>
<tr>
<td>Virginia</td>
<td>61</td>
</tr>
</tbody>
</table>
CVRS – 2018-19
Is Strip Grazing Worth the Work?

**SW Paddock** – 12.3 Acres
- Yield = 2,934 lbs/A
- Total = 36,088 lbs forage
- 17 Days of grazing
- Cows in Mid 1/3 gestation
- 10 minutes at Turn-In
- 10 minutes at Pull-off

**Sonic Paddock** – 17 Acres
- Yield = 4,477 lbs/A
- Total = 76,109 lbs of forage
- 40 days of grazing
- Cows in Last 1/3 gestation
- 45 minutes at set-up
- 20 minutes per move (6 times)

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**SW - Continuous Grazed Stockpiled Bermudagrass:**
- Cows in Mid 1/3 gestation
  - 1285 lb x 0.0225 = 28.9 DMI x 42 hd = **1,214 lbs/herd/day**
  - 36,088 lbs forage/ 17 days grazing = **2,123 lbs/day (RQDM)**

**Sonic - Strip Grazed (4-5 day move) Stockpiled Bermudagrass:**
- Cows in Last 1/3 gestation
  - 1285 lb x 0.025 = 32.1 DMI x 42 hd = **1,349 lbs/herd/day**
  - 76,109 lbs forage/ 40 days grazing = **1,903 lbs/day (RQDM)**

**Sonic – If we hadn’t strip grazed:**
- 1349 lbs/herd/day = 2,367 lbs RQDM/herd/day = 76,109 lbs forage = **32 Days**
- .57 Utilization
  - 2,367 RQDM
  - We gained 8 days

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**What’s That 8 Days Worth?**
- 8 bales of hay @ $40/bale = **$320**
- 5 lbs By-prod/c/d @ $240/ton = **$202**
  - **$522 Savings!**

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Savings</td>
<td>$522.00</td>
</tr>
<tr>
<td>Fencing</td>
<td>-$336.50</td>
</tr>
<tr>
<td>Labor</td>
<td>$77/hr return!</td>
</tr>
<tr>
<td>Total Electrified System</td>
<td>$336.50</td>
</tr>
</tbody>
</table>

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**Savvy use of Funds**
- Brand X 1.3 Joule Energizer = $160.00
- ¼ mile Turbo Polywire = $75.00
- 15 – Tread-In Posts = $67.50
- 2 – Ground Rods = $22.00
- 2 – Insulator/ Tensioners = $12.00

Total $522.00 - $336.50 = $185.50 ÷ 2.4 hrs

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Pitfalls to Watch For

- **Stockpiled Bermudagrass**
  - Take a standing forage sample!
  - Leaves contain the bulk of the “quality”
    - Increased rain speeds leaf degrade
    - “Tight” grazing encourages more stem removal
      - Assess rates of weathering and grazing, then compare to animals nutrient requirements
  - Inclement weather (ice/snow) is a game changer on SP Bermuda
    - Often hard to convince cows to begin grazing again
Pitfalls to Watch For

- **Stockpiled Bermudagrass**
  - ✓ Lactating Cows ride the edge
    - ✓ Monitor BCS and manure pats
  - ✓ Super tight grazing when dormant?
    - ✓ Won’t hurt Bermuda most years
    - ✓ Can increase spring CS weeds
  - ✓ Tight grazing prior to frost
    - ✓ Can reduce winter survival of stand
      - ✓ Graze no tighter than 3-4” until after frost
Cimarron Valley Research Station
Perkins, OK

- 42 Cow Herd
- 115 grazeable acres
- 2.74 Acres/cow

Special Thanks:
- Chris Stansberry
- Matt Sparks
- Josh Massey
- Jordan Green
- Dr. Chris Richards

150 Average days of historically feeding hay/supplement

Days of winter feeding in 2018 - 2019 59
Cimarron Valley Research Station
Perkins, OK
2018-2020

Grazing Season Extension Overview

128/91 Days supplement/hay reduction compared to traditional method.

$1 Expected savings per cow per day when grazing fertilized winter forages vs hay and feed

Young growth + fertility = High Quality Stockpile

Properly stockpiled Bermudagrass is essentially a standing hay crop that does not require machine harvest!

$27.75/Acre

<table>
<thead>
<tr>
<th>CVRS</th>
<th>Bermuda Hay</th>
<th>SP Bermuda 2018</th>
<th>SP Bermuda 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crude Protein (CP)</td>
<td>11.1</td>
<td>12.4</td>
<td>12.3</td>
</tr>
<tr>
<td>Energy (TDN)</td>
<td>61.3</td>
<td>60.4</td>
<td>59.4</td>
</tr>
<tr>
<td>Yield (lb DM/A) – Graze Days</td>
<td>3,829 lb – 57 days</td>
<td>3,199 lb – 61 days?</td>
<td></td>
</tr>
<tr>
<td>“Feeding” Cost/C/D (utilization)</td>
<td>$0.97 (90%)</td>
<td>$0.35 (67%)</td>
<td>$0.43 (65%)</td>
</tr>
</tbody>
</table>
Cimarron Valley Research Station
Perkins, OK
2018-2020

Cowherd Nutrition Overview

600 vs 132 Pounds of supplement per cow fed to the Traditional herd compared to the Progressive forager cows.

4.1 vs 1.6 Bales of hay fed per cow to the Traditional herd compared to the Progressive herd.
Feed Cost
$220/ton – Traditionally fed 600 lbs/cow for 150 days. 2019 feed use was 132 lbs/cow over 22 days (only fed during calving).

Hay Cost
$35/bale – Traditionally fed 4.1 bales (1200 lb) over 150 days. 2019 hay use was 1.62 bales of grass hay per cow over 59 days.

Pasture Cost
Traditionally no fall fertility or seed was used. In 2019, 32 acres of SP Bermuda at $27.75/A. 9 acres of CT small grains + DAP fertilizer at $75/A.

<table>
<thead>
<tr>
<th>CVRS 2018/19</th>
<th>Traditional</th>
<th>Progressive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feed ($/hd)</td>
<td>$66.00</td>
<td>$14.52</td>
</tr>
<tr>
<td>Hay ($/hd)</td>
<td>$143.50</td>
<td>$56.70</td>
</tr>
<tr>
<td>Pasture ($/hd)</td>
<td>$0</td>
<td>$37.21</td>
</tr>
<tr>
<td>Total Cost ($/hd)</td>
<td>$209.50</td>
<td>$108.43</td>
</tr>
</tbody>
</table>

$101.07/cow winter cost savings
Small changes in forage production/acre or utilization of that forage make much larger changes in reduced feed/hay, amplifying the savings of a winter forage system!
Mac Lindley R&D Farm
Valliant, OK  2018-2020

✓ 272 Cow Herd
✓ 945 Grazeable Acres
✓ 3.47 Acres/Cow

135 Average days of historically feeding hay/supplement

Days of winter feeding in 2018 - 2019  84

Special Thanks
- Curtis Cowell
- Ryan Evans
- Bob Heineman
- Casey Meek
- Chris Stansberry
- Dr. Chris Richards
- Glenda Rankin
- Keith Anderson
- Randy Holeman
- Dennis Wilson
Mac Lindley R&D Farm
Valliant, OK  2018-2020

51 Days total hay and supplement reduction.  $1 Expected savings per cow per day when grazing fertilized winter forages vs hay and feed

Properly Stockpiled Bermudagrass is essentially a standing hay crop that does not require machine harvest!

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<tr>
<th>MLRDF</th>
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<th>SP Bermuda 2018</th>
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<tbody>
<tr>
<td>Crude Protein (CP)</td>
<td>11.3</td>
<td>12.7</td>
<td>12.5</td>
</tr>
<tr>
<td>Energy (TDN)</td>
<td>62.1</td>
<td>59.3</td>
<td>58.2</td>
</tr>
<tr>
<td>Yield (lb DM/A) – Graze Days</td>
<td>2,249 - 38</td>
<td></td>
<td>3,192 – 76</td>
</tr>
<tr>
<td>“Feeding” Cost ($/C/D)</td>
<td>$0.97 (90%)</td>
<td>$0.38 (81%)</td>
<td>$0.47 (65%)</td>
</tr>
</tbody>
</table>
Cowherd Nutrition Overview

600 vs 204 vs 0

Pounds of supplement per cow fed to the Traditional herd, Progressive Young cows (3,4,5 yr) and Progressive Older Cows

3.3 vs 2.3

Bales of hay fed per cow to the Traditional herd compared to the Progressive herd
Mac Lindley R&D Farm
Valliant, OK    2018-2020

Change In Cow Bodyweight On Different Forages - MLRDF

Fall Regrowth
Stockpiled Bermuda
Hay
Ryegrass Vetch
Veg Bermuda
Summer Bermuda/Bahia

38 Days
Calving Season Feb 1-May 1
Seasonal Distribution of Conception Timing (%)

- 2018: 75.1%
- 2019: 88.1%
Feed Cost
$220/ton – Traditionally fed 600 lbs/cow for 150 days. 2019 feed use was 77 lbs/cow over 84 days (only used for 3-5 year olds).

Hay Cost
$35/bale – Traditionally fed 3.33 bales over 125 days. 2019 hay use was 0.66 bales of alfalfa per cow ($45/bale) and 1.63 bales of grass hay per cow over 84 days.

<table>
<thead>
<tr>
<th></th>
<th>MLRDF 2018</th>
<th>Traditional</th>
<th>Progressive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feed ($/hd)</td>
<td>$66.00</td>
<td>$8.47</td>
<td></td>
</tr>
<tr>
<td>Hay ($/hd)</td>
<td>$116.55</td>
<td>$86.75</td>
<td></td>
</tr>
<tr>
<td>Pasture ($/hd)</td>
<td>$0</td>
<td>$31.30</td>
<td></td>
</tr>
<tr>
<td>Total Cost ($/hd)</td>
<td>$182.55</td>
<td>$126.52</td>
<td></td>
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</tbody>
</table>

$56.03/cow winter cost savings
Small changes in forage production/acre or utilization of that forage make much larger changes in reduced feed/hay, amplifying the savings of a winter forage system!
Survival in the Cow Business?

Make the Cow do the Work!

Adding 60 Days of Winter Grazing is Equal to:

- 42 lb. Increase in Weaning Weight
- 4.8% Increase in Weaning Percentage
- 5.4% Increase in Current Market Value
Economics Overview - The Impact of Cow Fertility

21 days extra gain
2 lbs. / day ADG
$1.50/lb. Value of Gain
$63/cow

What does it cost if a cow misses a cycle?

\[ \text{Cost} = \frac{\text{Number of females diagnosed as bred}}{\text{Number of females exposed}} \times 100 \]

Preg. % Target = 95%

How big of difference can Weaning % make?

\[ \text{Weaning %} = \frac{\text{Number of calves weaned}}{\text{Number of females exposed}} \times 100 \]

Weaning % Target = 90%

**Gross Revenue Comparison (WW vs W%)**

<table>
<thead>
<tr>
<th>Avg. Weaning Weight</th>
<th>80%</th>
<th>85%</th>
<th>90%</th>
<th>95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>475</td>
<td>$62,700</td>
<td>$66,619</td>
<td>$70,538</td>
<td>$74,456</td>
</tr>
<tr>
<td>500</td>
<td>$64,000</td>
<td>$68,000</td>
<td>$72,000</td>
<td>$76,000</td>
</tr>
<tr>
<td>525</td>
<td>$65,520</td>
<td>$69,615</td>
<td>$73,710</td>
<td>$77,805</td>
</tr>
<tr>
<td>550</td>
<td>$66,440</td>
<td>$70,593</td>
<td>$74,745</td>
<td>$78,898</td>
</tr>
</tbody>
</table>

Calculated on a sample 100 cow herd including price slide for additional weight.
Can We Take It Further?

Utilize Native Forages!
Can We Take It Further?
Utilize Cool Season Forages!
Feeding Cows in the winter is normally the #1 variable cost associated with owning that cow.

- Make The Cow Do The Work!
- Having a balanced forage system will help reduce hay feeding days.
- Supply quantity and quality!
- Grazing fertilized forage can save you $1/C/D!
- Stockpiling fall forage production as a standing hay crop – Bermudagrass, Fescue, Brassicas, Small Grains, Native
- Growing a cool season spring production forage – Annual Ryegrass, Small Grains, Clover, Fescue