10 Tips for Grazing 365 Days

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Ruminant livestock were designed to be grazers. Grazing is almost always the most economical way to feed ruminant livestock.
Typical Cool Season Growth Curve

Seasonal "gaps" in forage supply

Yield

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
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1. Proper Stocking Rate
Carrying capacity of pasture is determined by four factors

\[
\text{Carrying Capacity} = \frac{8000 \times 160 \times 0.50}{1200 \times 0.03 \times 365}
\]

\[
\text{Carrying Capacity} = 48.7 \text{ cows for 365 days}
\]

\[
55 \text{ cows} = 320 \text{ days}
\]

\[
59 \text{ cows} = 300 \text{ days}
\]
10 Tips for Grazing 365 days

1. Proper Stocking Rate
2. Efficient Utilization of Forage Produced
Grazing Period Length Affects Utilization

![Graph showing the relationship between length of grazing period and utilization rate. The graph indicates a negative correlation, with utilization rate decreasing as the length of the grazing period increases. Two lines represent temporal and seasonal utilization, with seasonal utilization showing a sharper decline.]
## Grazing Efficiency

### Total Season

<table>
<thead>
<tr>
<th>Pasture Number</th>
<th>Grazing Period</th>
<th>Utilization Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 pasture</td>
<td>Continuous</td>
<td>30%</td>
</tr>
<tr>
<td>4 pasture</td>
<td>7-10 days</td>
<td>35%</td>
</tr>
<tr>
<td>8 pasture</td>
<td>3-5 days</td>
<td>50%</td>
</tr>
<tr>
<td>12 pasture</td>
<td>2-4 days</td>
<td>65%</td>
</tr>
<tr>
<td>24 pasture</td>
<td>1-2 days</td>
<td>70+ %</td>
</tr>
</tbody>
</table>
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1. Proper Stocking Rate
2. Efficient Utilization of Forage Produced
3. Use legumes
Legume/Tall Fescue Mix

Legumes:
- Start growth 2 weeks after CSG
- Deeper rooted species continue growth in summer
- Enhance CSG yield
- Enhance forage quality in spring and summer

Herd feed requirement

Forage yield

- April
- June
- August
- October

Fescue

Legumes
Legumes

- Annual lespedeza
- Hairy Vetch
- Winter peas
- Alfalfa
- Red Clover
- White Clover
- Crimson Clover
- Arrowleaf Clover
- Winter peas
- Alfalfa
HIGHLY DIVERSE PASTURE

Longer growing season
higher quality diet
resistant to stress
more total production
but...

you must have a
management system in
place capable of
maintaining this diversity
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1. Proper Stocking Rate
2. Efficient Utilization of Forage Produced
3. Use legumes
4. Add Warm Season Grasses
Introduced Warm Season Grasses

Forage Yield

- Bermudagrass
- Caucasian Bluestem
- Tall Fescue

Months:
- Feb
- Apr
- Jun
- Aug
- Oct
- Dec
Native Warm Season Grasses

Forage Yield

- Tall Fescue
- Switchgrass & Eastern Gamagrass
- Big Bluestem
- Indiangrass

Feb Apr Jun Aug Oct Dec
Predominant Warm Season Grasses in the Midwest

- **Native WSG**
  - Big Bluestem
  - Indiangrass
  - Switchgrass
  - Eastern Gamagrass
  - Others
    - little bluestem
    - sideoats grama
    - dropseeds

- **Introduced WSG**
  - Bermudagrass
    - common types
      - Guymon,
      - Wrangler, Cheyenne
    - hybrids
      - Hardie, Tifton 44,
      - Midland, Midland 99,
      - Ozark, others
  - Old World Bluestems
    - Caucasian
    - Plains
    - WW Spar
    - King Ranch
Native Warm Season Grasses

- Big Bluestem
- Indiangrass
- Switchgrass
- Eastern Gamagrass
Benefits of Warm Season Grasses?

- Good summer production
- Helps manage fescue endophyte problem
- Helps manage spring growth of cool seasons
- Favorable haying weather
- Adapted/persistent
- More efficient users of H2O & N than cool season grasses
- Wildlife benefits (NWSG)
- Good quality and animal performance
- 38% higher season long ADG when WSG included in summer grazing as compared to tall fescue full season
<table>
<thead>
<tr>
<th>Species</th>
<th>Crude Protein</th>
<th>DOM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Big Bluestem</td>
<td>6.35 – 15.28</td>
<td>60.20 – 69.32</td>
</tr>
<tr>
<td>Indiangrass</td>
<td>6.83 – 14.61</td>
<td>56.24 – 67.70</td>
</tr>
<tr>
<td>Switchgrass</td>
<td>6.43 – 15.78</td>
<td>58.70 – 67.20</td>
</tr>
<tr>
<td>Eastern Gamagrass</td>
<td>5.73 – 16.31</td>
<td>58.87 – 68.74</td>
</tr>
<tr>
<td>Bermudagrass</td>
<td>9.25 – 15.28</td>
<td>62.44 – 75.29</td>
</tr>
<tr>
<td>Caucasian Bluestem</td>
<td>8.93 – 21.53</td>
<td>61.56 – 73.31</td>
</tr>
</tbody>
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4. Add Perennial Warm Season Grasses
5. Stockpile Tall Fescue
Stockpiled Fescue - competitive advantage

- Fall regrowth accumulates a high concentration of carbohydrates (high quality)
- Waxy layer on leaf makes it resistant to weathering
- Fall regrowth has lower levels of toxins from endophyte
- Ergovaline concentrations drop more rapidly than forage quality through the winter
Comparison of stockpiled tall fescue quality to average hay quality

Source: Kennedy - Forage Diet Quality Study 1997-2003
Keys to Success

- Growing the stockpiled fescue
- Proper utilization of stockpile
Stockpiling Recipe

- Start with fescue pastures that have 3 to 6 inches of leaf in mid to late August or 60 to 90 days prior to the end of the growing season.
- Apply 40 - 60 lbs. N
- Defer grazing until growth stops (late Nov to early Dec.) or until needed
- Utilize all other pastures in rotation for fall grazing until fully utilized and grass growth stops
Utilizing the stockpiled forage

- Treat as “hay on the stump”
- Allocate out in 1 to 3 day feed supplies by stripgrazing
  - improves utilization
    - From 35% for 2 weeks to 70%+ for 3 days or less
  - stretches forage supplies
    - 40% more grazing days per acre
  - helps maintain quality
    - Cows aren’t damaging frozen plant tissue
Seasonal Costs

- **Haying:** $0.91 - 1.09/day
  \[ \times 80 \text{ days} = \$73 - \$87 \]

- **Stockpile + Stripgraze:**
  \[ 0.43/\text{day} \times 80 \text{ days} = \$34.40 \]
  \[ \$38.60 - 52.60/\text{cow savings/year} \]
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Sudan
Corn
Millet
Crabgrass
Crabgrass

- Medium yield
- Reseeds well if managed
- Good tolerance to
  - Heat stress
  - Poor drainage
  - Poor fertility
- Fair tolerance to drought
- High quality
Crabgrass Growth Curve
Sorghum/Sudan, Corn, Millet

- Corn has the highest fertility requirement
- Sorghum/Sudan can cause nitrate and prussic acid poisoning under certain conditions (young, tender growth and after frost)
- Corn & Pearl Millet will not have prussic acid poisoning but can accumulate nitrates
- For best use all should be strip-grazed or at least rotationally grazed
- All can provide good growth and quality
Sorghum
Sudangrass/Corn/Millet
Growth Curve

Dry matter production

Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec
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7. Use Winter Annual Forages
Adding Cool Season Annuals

Short seasonal "gaps" in forage supply

- Stockpile
- Brassicas
- Small grains

Yield

Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec
Brassicas

- Turnips, rape, kale, swededs
- Excellent quality late fall – early winter
- Can produce up to 3 tons by Dec. 1 if planted in late August
- Don’t hold up well past January 1
Brassicas’ Growth Curve
Rape

Kale

Grazing Rape

Turnip
Small Grains Growth Curve
Cereal Rye/Wheat

- Will produce 1500 – 3000 lbs. of forage by Dec. 1 if planted by Sept. 1
- Annual yields of 6000-8000 lbs
- High Quality
  - 20% CP
  - 25 – 30% ADF
- Stays vegetative until mid to late March
- Rye is more winter hardy – actively growing down to 39°
Annual Ryegrass

- High quality
  - 20 – 22% CP
  - <22% ADF
- Capable of producing 3000 – 5000 lbs. of forage within 90 days of planting
- Produces more spring growth than fall growth
- Total seasonal yields of 10,000 lbs. in south MO
Ryegrass works well overseeded into warm season pastures such as bermudagrass.

Or overseeded into existing thin stands of cool season grass.
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8. Graze Crop Residues
Grazing Crop Residues

- Crop residues usually represent about half of the pre-harvest plant dry matter.
- A field producing 120 bushel corn grain will contain 3 to 4 tons of roughage dry matter per acre.
- Beef cattle will normally consume between 30 and 40% of the crop residue (1800 – 3200 lbs./ac.).
- The average number of grazing days for crop residue is 65-111.
- Livestock select the portions of crop residues with the highest digestibility and protein concentration first.
Grazing Crop Residues

- Strip grazing of crop residues enhances efficiency of utilization (resulting in more potential grazing days) and helps ensure maintenance of a high quality diet for the animals over a longer period of time by reducing selective
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9. Graze Dormant Alfalfa and other Hayfields
Graze Dormant Alfalfa and other Hayfields

- recommended to allow growth to accumulate in alfalfa pastures or hayfields for about 6 weeks before the first killing frost
- once cold weather has ensured dormancy, the accumulated growth can be grazed by livestock
- tends to reduce alfalfa weevil populations the following spring
- Summer or fall regrowth of other hayfields should be grazed utilizing strip-grazing
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9. Graze Dormant Alfalfa and other Hayfields
10. Graze Dormant Warm Season Grasses and Other Forage Crops
Graze Dormant WSG

- Studies in OK & AR show stockpiled bermudagrass protein levels above 10% if grazed by the end of December
- Missouri data has shown crude protein of dormant NWSG of 7 – 9% with TDN levels of 55 – 60%
- Some type of supplementation may be needed for some classes of livestock
Utilizing stockpiled fescue as a supplement to Dormant NWSG
Corn and Grain sorghum are planted for winter grazing.
Possible Forage System for a 365 Day Grazing Season

Winter Annual

Stockpiled

Tall Fescue

Warm Season Grass/legume

Stockpiled
Daily and seasonal forage costs for alternative wintering strategies at typical yields, costs, and period of use

Winter feeding period - Dec 1 to April 10

<table>
<thead>
<tr>
<th>Forage Source</th>
<th>Hay</th>
<th>Corn stalks</th>
<th>Stockpiled tall fescue</th>
<th>Ryegrass + cereal rye</th>
</tr>
</thead>
<tbody>
<tr>
<td>$/cow/day</td>
<td>$1.32</td>
<td>$0.05</td>
<td>$0.31</td>
<td>$0.61</td>
</tr>
<tr>
<td>Days of use</td>
<td>130 hay</td>
<td>60 stalks</td>
<td>90 graze</td>
<td>90 graze</td>
</tr>
<tr>
<td></td>
<td>70 hay</td>
<td>40 hay</td>
<td>40 hay</td>
<td></td>
</tr>
<tr>
<td>Wintering cost</td>
<td>$172</td>
<td>$122</td>
<td>$70</td>
<td>$108</td>
</tr>
</tbody>
</table>

SOURCE: Jim Gerrish, University of Missouri.
### The Economics of Grazing Beef Cows During Winter

G.J. Bishop-Hurley & R.L. Kallenbach

<table>
<thead>
<tr>
<th>Forage</th>
<th>DMI (lb/day)</th>
<th>Cost ($/cow)</th>
<th>Relative Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tall Fescue Stockpile</td>
<td>23.28</td>
<td>67.44</td>
<td>100</td>
</tr>
<tr>
<td>Annual Ryegrass</td>
<td>15.70</td>
<td>45.90</td>
<td>68</td>
</tr>
<tr>
<td>Wheat</td>
<td>16.02</td>
<td>71.28</td>
<td>106</td>
</tr>
<tr>
<td>Rye</td>
<td>17.04</td>
<td>40.95</td>
<td>61</td>
</tr>
<tr>
<td>Turnip</td>
<td>16.15</td>
<td>34.19</td>
<td>51</td>
</tr>
<tr>
<td>Rape</td>
<td>15.67</td>
<td>51.57</td>
<td>76</td>
</tr>
<tr>
<td>Tall Fescue Hay1</td>
<td>28.12</td>
<td>87.72</td>
<td>130</td>
</tr>
<tr>
<td>Alfalfa Hay (fair)</td>
<td>23.39</td>
<td>129.72</td>
<td>192</td>
</tr>
</tbody>
</table>
So...Is 365 Days of Grazing Possible?

- Perhaps, but it takes substantial management.
- Variations in weather make it more difficult some years.
- Might not always be the most cost effective.
- Avoid over stocking.
- Choose the right species - diversity:
  - 70 to 85% of grazing area in cool-season grass/legume mixture.
  - 15 to 30% of grazing area in warm-season species.
- Utilize pasture growth efficiently.
- Play winter smart – Stockpile tall fescue.
For more information see: