10 Tips for Extending the Grazing Season

Mark Kennedy
State Grazinglands Specialist
USDA-NRCS

Goals of Profitable Grazing Management

- Meet the nutritional needs of livestock from standing pasture as many days as possible
- Harvest forage from pastures with animals as efficiently as possible

10 Tips for Extending the Grazing Season

1. Proper Stocking Rate

Balance Livestock Numbers with Forage Supply

Stocking rate: The number of animals or animal liveweight assigned to a grazing unit on a seasonal basis.

Carrying capacity: The stocking rate that provides a target level of performance while maintaining the integrity of the resource base.

Carrying capacity of pasture is determined by four factors

\[
\text{Carrying Capacity} = \frac{\text{Forage Production} \times \text{Seasonal Utilization Rate}}{\text{Daily Intake} \times \text{Length of the Grazing Season}}
\]

Carrying capacity of pasture is determined by four factors

\[
\text{Carrying Capacity} = \frac{8000 \times 160}{1200 \times 0.3} \times 0.50 
\]

- 48.7 cows for 365 days
- 55 cows = 320 days
- 59 cows = 300 days
10 Tips for Extending the Grazing Season

1. Proper Stocking Rate
2. Efficient Utilization of Forage Produced

Grazing Period Length Affects Utilization

Grazing Efficiency

- Total Season

<table>
<thead>
<tr>
<th># Pastures</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>

Typical Cool Season Growth Curve

Adding Legumes
**Alfalfa**

**Annual Lespedeza**

**Clover**

**Diverse Legume/Cool season Pasture mix**

**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.

**10 Tips for Extending the Grazing Season**

1. Proper Stocking Rate
2. Efficient Utilization of Forage Produced
3. Use legumes
4. Add Warm Season Grasses

**Adding Warm Season Grasses – (15 – 30%)**

- **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 99, Ozark, others
  - Old World Bluesem
    - Caucasian
    - Plains
    - WW Spar
    - King Ranch

**Predominant Warm Season Grasses in the Midwest**

- **Native WSG**
  - Big Bluestem
  - Indiangrass
  - Switchgrass
  - Eastern Gamagrass
- **Introduced WSG**
  - Bermudagrass
    - common types
      - Guymon, Wrangler/Cheyenne
    - hybrids
      - Hardie, Tifton 44, Midland 99, Ozark, others
  - Old World Bluesem
    - Caucasian
    - Plains
    - WW Spar
    - King Ranch
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

Warm Season Grass Quality
Southern MO Data (1994-2000)

<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>Indian grass</td>
<td>6.83 – 14.61</td>
<td>56.24 – 67.70</td>
</tr>
<tr>
<td>Switch grass</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>
</table>

10 Tips for Extending the Grazing Season

1. Proper Stocking Rate
2. Efficient Utilization of Forage Produced
3. Use legumes
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

Economics - average conditions

- 26# per cow per day
- $70 per ton good grass hay
- $.58 per pound for nitrogen @ 60#/ac=$34.80/ac
- 60# should give 10" growth @ 300#/ac

Seasonal Costs

- Haying: $.91 - 1.09/day x 80 days = $73 - $87
- Stockpile + Stripgraze: .43/day x 80 days = $34.40
- $36.60 - 52.60/cow savings/yr

10 Tips for Extending the Grazing Season

1. Proper Stocking Rate
2. Efficient Utilization of Forage Produced
3. Use legumes
4. Add Perennial Warm Season Grasses
5. Stockpile Tall Fescue
6. Use Warm Season Annuals
***Crabgrass***

- Medium yield potential
- Good persistence if reseeding is managed properly
- Good tolerance to:
  - heat stress
  - poor drainage
  - poor soil fertility
- Fair tolerance to:
  - drought
- Forage quality good. Probably the easiest to manage for dairy quality feed.

---

**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
**10 Tips for Extending the Grazing Season**

1. Proper Stocking Rate
2. Efficient Utilization of Forage Produced
3. Use legumes
4. Add Perennial Warm Season Grasses
5. Stockpile Tall Fescue
6. Use Warm Season Annuals
7. Use Winter Annual Forages

**Brassicas**

- Turnips, rape, kale, swedes
- 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
- Turnip
- Grazing Rape

**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°

**Cereal Rye overseeded into Corn Stubble**
Small Grains Growth Curve

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 in fall growth
- Total seasonal yields of 10,000 lbs. in south MO

Annual Ryegrass Growth Curve

Ryegrass works well overseeded into warm season pastures such as bermudagrass

Or overseeded into existing thin stands of cool season grass

10 Tips for Extending the Grazing Season
1. Proper Stocking Rate
2. Efficient Utilization of Forage Produced
3. Use legumes
4. Add Perennial Warm Season Grasses
5. Stockpile Tall Fescue
6. Use Warm Season Annuals
7. Use Winter Annual Forages
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.)
- 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
Relative amounts and values of corn residue plant parts

<table>
<thead>
<tr>
<th>Item</th>
<th>Husk</th>
<th>Leaf</th>
<th>Stem/ a Cob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of residue</td>
<td>12</td>
<td>27</td>
<td>49</td>
</tr>
<tr>
<td>dry matter</td>
<td></td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Crude Protein, % DM</td>
<td>3.6</td>
<td>7.8</td>
<td>4.5</td>
</tr>
<tr>
<td>In vitro dry matter</td>
<td>67</td>
<td>47</td>
<td>45</td>
</tr>
<tr>
<td>disappearance, %</td>
<td></td>
<td></td>
<td>35</td>
</tr>
<tr>
<td>Palatability</td>
<td>High</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Low</td>
</tr>
</tbody>
</table>

Relative amounts and values of corn residue plant parts

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 grazing.

10 Tips for Extending the Grazing Season

1. Proper Stocking Rate
2. Efficient Utilization of Forage Produced
3. Use legumes
4. Add Perennial Warm Season Grasses
5. Stockpile Tall Fescue
6. Use Warm Season Annuals
7. Use Winter Annual Forages
8. Graze Crop Residues
9. Graze Dormant Alfalfa and other Hayfields
10. Graze Dormant WSG

10 Tips for Extending the Grazing Season

- 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.

Graze Dormant Alfalfa and other Hayfields

- 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

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 Hay†</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?

- It Depends – possible with good planning, intensive management and favorable weather
- Variations in weather make it more difficult some years
- Might not always be the most cost effective
The US. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact the USDA's TARGET Center at (202)-720-2600 (voice & TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326W, Whitten Building, 14th & Independence Ave., SW, Washington, DC 20250 or call (202) 720-9410 or call (202) 720-5964 (voice & TDD). USDA is an Equal Opportunity Provider and Employer.