Best Management Practices for Grazing Systems

Nonpoint Source Pollution Workshop
Nutrients & the Rural Landscape
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Matt Bunger
Grasslands Specialist
Normal, IL
Grazing System

- 120 acres under MiG system
- Multiple Paddocks
- Livestock Watering System
- Fed by farm pond
What we see!
Livestock... the concern??

- Overgrazing
- Continuous grazing
- Poor water access areas
- Poor crossings
- Overstocking of pastures
- Stream-side feedlots

Most problems can be solved through proper planning and management.
Prescribed Grazing

- **Definition:**

  - *The controlled harvest of vegetation with grazing or browsing animals, managed with the intent to achieve a specified objective*
Prescribed Grazing

• *Purposes:*

• *This Practice is applied as part of a conservation management system accomplish one or more of the following purposes:*
Prescribed Grazing Purposes:

• 1. Improve or maintain the health and vigor of key species and to maintain a stable and desired pant community.
• 2. Provide or maintain food, cover and shelter for animals of concern.
• 3. Improve or maintain animal health and productivity.
• 4. Maintain or improve water quality and quantity.
• 5. Reduce accelerated soil erosion and maintain or improve soil condition for sustainability of the resource.
Prescribed Grazing

• A grazing management plan incorporates the planned use of water, fencing and forage, however…

• Vegetation management (grazing management) is the foundation to the success of farm/ranch planning (RMS).
Fundamentals of successful grazing management

- Meet the nutritional needs of the livestock from standing pasture
- Optimize pasture yield, quality, and persistence
- Maintain or enhance the natural resource base
- Integrate appropriate technology and knowledge into a practical system
Four Essentials of Grazing Management

- Proper Stocking
- Proper Season of Grazing
- Proper Distribution of Grazing
- Selecting a Grazing System that matches Livestock and producer needs.
Proper Stocking

• PROPER STOCKING – is the single most important factor. To achieve this, you must;
  – Inventory total forage
  – Determine grazable forage

• The amount of grazable forage present determines the proper stocking rate for each pasture.
Estimating Grazing Days

\[
\begin{align*}
8000\#/ \text{ac.} \times 20 \text{ ac.} \times 50\% \ HE \\
1200\# \text{ AW} \times 0.026 \text{ IR} \times 20 \text{ AN}
\end{align*}
\]

\[
\frac{80,000\# \text{ forage}}{624\# \text{ daily intake}} = 128 \text{ days}
\]

\[
1000\# (AU) \times 0.026 (2.6\% \text{ intake}) = 26\#/\text{day}
\]

\[
26\# \times 365 \text{ days} = 9490\# \text{ year}
\]

To feed one AU/year
An Simple Example:

One Cow for 100 days
Forage is balanced

- Long duration
- Season long timing
- Low intensity
- Poor distribution
- Properly stocked (balanced)

100 Cows for 1 day
Forage is balanced

- Short duration
- Single growth stage timing
- High intensity
- Good distribution
- Properly stocked (balanced)

The forage consumed is the same. Are the effects the same? No.

How does the length of rest differ?

How will the plants be affected?
Forage Quality
Plant growth stages vs. digestibility
Factors Affecting Forage Quality

• Digestibility declines as plants mature!
• Intake declines as plants mature!
• Forage Quality declines as plants mature!
• Animal performance declines as plants mature! (especially tall fescue)
• Forage Yield increases as plants mature!
Recommended Grazing Heights and Rest Periods

• Species and Mixtures (Prescribed Grazing 528 Std. table 1)

• Legumes require 30 days rest period to stay in the stand!

• Some grasses can get by on 21 days rest (In good growing conditions)

• Always move animals by forage height not the calendar!
5-wire High Tensile Electric Fence (fixed)
Temporary Fence (flexible)
**Optimum Paddock #’s based on Livestock Type** *(Rule of Thumb for 20 – 40 days rest)*

<table>
<thead>
<tr>
<th>Livestock type</th>
<th>Grazing Period (Days)</th>
<th>Paddock #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy &amp; Beef finishing</td>
<td>0.5 – 1</td>
<td>20 - 80</td>
</tr>
<tr>
<td>Dairy Heifer &amp; Beef Stockers</td>
<td>1 - 2</td>
<td>16 - 40</td>
</tr>
<tr>
<td>Cow/calf, Sheep, Goats, Horses</td>
<td>2 - 5</td>
<td>8 - 16</td>
</tr>
</tbody>
</table>
Stripgrazing Stockpiled Fescue

11-21-2007
Cheap Winter grazing for Sheep

Strip Grazing Stockpiled Fescue is the most efficient method
E. Gama Grass, Native Warm Season Grass, Summer grazing forage.

Note the brown Orchard grass in the upper right corner!
Soil Erosion and Water Quality
Alternative Water Sources
Alternative Water Sources (1)

When cattle are provided alternative sources of good quality water, visits to streams were greatly reduced. Distance traveled to water also made a difference.

When travel distance was under 800 ft and alternative water was supplied the streams were rarely used.
Research conducted at North Dakota State University, Fargo, ND revealed that water temperatures between 40 and 65 degrees Fahrenheit are ideal for cattle to drink.

* Steers having access to cool drinking water gained 0.3 to 0.4 pounds more per day than those drinking warm water.

Alternative Water Sources (3)

* Installation of a water trough had a significant impact on cattle use in stream side areas.
* Use of a stream within a pasture dropped from 4.7 to 0.9 minutes per cow per day.
* Use of a wide streamside area dropped from 8.3 to 3.9 minutes per cow per day after the trough was installed.
  • This correlated to an 81% reduction in the time cattle spent drinking from the stream and a 53% reduction in the time cattle spent in an adjacent streamside area.
  • Conclusion – cattle preferred to drink from a water trough over drinking from a stream, 75% of the time.

Clawson, OR State University, 1993.
Flash Graze It

$\frac{1}{2}$ to 2 days
Use larger tanks and set them to give more access to livestock!
Water Tanks Sizing
linear access and capacity due to travel distance!
Pumping Plant
Pipeline & Quick Connect
Portable water system
Preferred crossing points

Cattle don’t like soft creek bottoms. They prefer solid footing.
Cattle not only use them but rarely strayed off of them.
Stream Crossing
Controlling Mud
Feeding Options

• **Pasture** - Feed on ridge tops
• **Pasture** - All-weather surface for feed/water
• **Dry lot** - All-weather surface for feeding and water
• Delay need for feeding areas
  – Stockpiled forages
  – Crop residue
MUD CUTS PERFORMANCE

• Muddy animals ---> ↑ stress
• Mud ---> ↑ energy requirements
• Mud ---> ↓ intake
• Mud ---> ↑ disease
• Mud ---> a problem for nearly every beef producer
Heavy Use Area Protection
Livestock Winter Feeding Station
Access Road
Heavy Use Area Protection
Windbreak/Shelterbelt
Providing Shade - portable
Pasture Condition Score Sheet - June, 2007

**Indicator**

<table>
<thead>
<tr>
<th>1 Point</th>
<th>2 Points</th>
<th>3 Points</th>
<th>4 Points</th>
<th>5 Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Percent desirable plants</strong></td>
<td>&gt;60%</td>
<td>40-60%</td>
<td>20-40%</td>
<td>&lt;20%</td>
</tr>
<tr>
<td><strong>Lives Plant cover</strong></td>
<td>50%</td>
<td>35-49%</td>
<td>20-34%</td>
<td>&lt;15%</td>
</tr>
<tr>
<td><strong>Canopy</strong></td>
<td>50%</td>
<td>40-49%</td>
<td>30-39%</td>
<td>&lt;20%</td>
</tr>
<tr>
<td><strong>Uniformity of use</strong></td>
<td>5%</td>
<td>10%</td>
<td>20%</td>
<td>30%</td>
</tr>
<tr>
<td><strong>Livestock concentration areas</strong></td>
<td>10%</td>
<td>20%</td>
<td>30%</td>
<td>40%</td>
</tr>
<tr>
<td><strong>Soil compaction</strong></td>
<td>10%</td>
<td>20%</td>
<td>30%</td>
<td>40%</td>
</tr>
<tr>
<td><strong>Plant residue</strong></td>
<td>5%</td>
<td>10%</td>
<td>20%</td>
<td>30%</td>
</tr>
<tr>
<td><strong>Plant vigor</strong></td>
<td>10%</td>
<td>20%</td>
<td>30%</td>
<td>40%</td>
</tr>
<tr>
<td><strong>Percent legume</strong></td>
<td>80%</td>
<td>60-79%</td>
<td>40-59%</td>
<td>20-39%</td>
</tr>
</tbody>
</table>

**Percent desirable plants**

- >60% Desirable species present. Annual weeds and/or woody invasives are less than 20% of stand. Mostly weedy annuals and/or woody invasives present and expanding. Shade is a factor.
- 40-60% Desirable species 20-40% of stand. Mostly weedy annuals and/or woody invasives present and expanding. Shade is a factor.
- 20-40% Desirable species 40-60% of stand. Mostly weedy annuals and/or woody invasives present and expanding. Shade is a factor.
- <20% Desirable species <20% of stand. Mostly weedy annuals and/or woody invasives present and expanding. Shade is a factor.

**Lives Plant cover**

- 50% Photosynthetic area present. Runoff is slight due to low plant cover.
- 35-49% Photosynthetic area present. Runoff is slight due to low plant cover.
- 20-34% Photosynthetic area present. Runoff is slight due to low plant cover.
- <15% Photosynthetic area present. Runoff is slight due to low plant cover.

**Canopy**

- 50% Forage species are present. Runoff is slight due to low plant cover.
- 40-49% Forage species are present. Runoff is slight due to low plant cover.
- 30-39% Forage species are present. Runoff is slight due to low plant cover.
- <20% Forage species are present. Runoff is slight due to low plant cover.

**Uniformity of use**

- 5% Runoff is controlled by long narrow strips or spots.
- 10% Runoff is controlled by short narrow strips or spots.
- 20% Runoff is controlled by long narrow strips or spots.
- 30% Runoff is controlled by short narrow strips or spots.

**Livestock concentration areas**

- 10% Livestock concentration areas cover more than 10% of the pasture. Area is avoided.
- 20% Livestock concentration areas cover more than 20% of the pasture. Area is avoided.
- 30% Livestock concentration areas cover more than 30% of the pasture. Area is avoided.
- 40% Livestock concentration areas cover more than 40% of the pasture. Area is avoided.

**Soil compaction**

- 10% Soil is friable, easily into ground. Survey flag is easily moved. Areas between waterers, possibly unbuffered.
- 20% Soil is hard, heavy compaction is evident. Areas between waterers, possibly unbuffered. Legs may be avoided.
- 30% Soil is hard, heavy compaction is evident. Areas between waterers, possibly unbuffered. Legs may be avoided.
- 40% Soil is hard, heavy compaction is evident. Areas between waterers, possibly unbuffered. Legs may be avoided.

**Plant residue**

- 5% No organic matter or organic matter residue present. Products are <1 inch thick.
- 10% Organic matter residue present. Products are <2 inches thick.
- 20% Organic matter residue present. Products are <3 inches thick.
- 30% Organic matter residue present. Products are <4 inches thick.

**Plant vigor**

- 10% Plants are normal or >80% of plants are healthy.
- 20% Plants are normal or >80% of plants are healthy.
- 30% Plants are normal or >80% of plants are healthy.
- 40% Plants are normal or >80% of plants are healthy.

**Erosion**

- 15% Erosion is confined to steep terrain of unit; well defined rills are 3-8 inches deep at close intervals and/or grazing terraces are present. Trails are evident causing concentrated flows.
- 20% Erosion is confined to steep terrain of unit; well defined rills are 3-8 inches deep at close intervals and/or grazing terraces are present. Trails are evident causing concentrated flows.
- 30% Erosion is confined to steep terrain of unit; well defined rills are 3-8 inches deep at close intervals and/or grazing terraces are present. Trails are evident causing concentrated flows.
- 40% Erosion is confined to steep terrain of unit; well defined rills are 3-8 inches deep at close intervals and/or grazing terraces are present. Trails are evident causing concentrated flows.
Fundamentals of Successful Grazing Management

- Integrate appropriate technology and knowledge into a practical/profitable system
  - Not only fence and water but….a management system
    - Plant species/plant health
    - Soil health/fertility
    - Nutrient management
    - Livestock nutrition/supplementation
    - Genetics
    - Herd health
    - Marketing
  - What are the weak links in your system?
Keep Accurate Grazing Records

• You cannot manage what you don’t measure!
• Measure forages before/after grazing
• Document grazing days
• Manage with one eye 30 days ahead
• Be thinking 2-3-4 months ahead where your grazing cycle will be!
Keys to Success

- Prepare a prescribed Grazing Plan
- Keep the system flexible
- Protection of your natural resources
- You are applying a system not individual practices
- Plan for year round grazing
- Quality water with good distribution in pasture
Grazing Principles

• Forage Animal Balance
• Rest Periods
• Grass/Legume Mixtures
• Soil Erosion/Condition (testing)
• Balance Plant Nutrient Needs
• Multiple Pastures
• Travel Distance to Water
• Limit access to surface water
Protect Surface Water

- Fence streams and ponds separately
- Limiting access improves H2O quality
- Flash graze the fenced protected areas
- Develop access ramps/stream crossings
- Provide alternative water sources
  - Wells, Rural Water, or Springs
- Pond/Stream Sediments harbor diseases and foot rot
Adequate Watering Facilities

- Travel distance to water, 800 or less
- Improves forage utilization
- Loss of the herding effect
- Location aids in reducing erosion
- Adequate water quantity for livestock
- Improve water quality for livestock
- Adequate linear space for animals to drink
Environmental Benefits of Prescribed Grazing

• Improved plant health
• Improved water quality
• Reduced erosion: streams, ponds, travel paths, critical areas, etc.
• Reduced time in barn lots
• Reduced animal waste issues
• Improved animal health
• Increased plant species diversity
• Improved Wildlife Benefits
Conservation Practices Most Commonly Used in Grazing Plans

- Fence 382
- Pipeline 516
- Watering Facilities 614
- Pasture and Hayland Seeding 512
- Heavy Use Area 561
- Pumping Plant for Water Control 533
- Water Well 642
- Many of the Practices in FOTG are available!
Information Sources

- NRCS Field Office Technical Guide
- NRCS National Pasture & Range Handbook
- Homer Sanchez, NRCS State Rangeland Management Specialist
- Mark Kennedy, NRCS State Grassland Specialist Missouri
- Missouri Grazing Schools Program
- University of Missouri
Matt Bunger
NRCS Grasslands Specialist/Illinois Grazing Lands Conservation Initiative (GLCI) Coordinator
402 North Kays Drive
Normal, IL 61761
matt.bunger@il.usda.gov
217-621-4845

(Publications, grazing events, computer programs, web sites, organizations, newsletters)