Design and Layout of Grazing Systems

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Components of the Grazing System
- Landscape
- Forage
- Livestock
- Water
- Fence

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FLEXIBILITY

Flexibility
What does that really mean?
- Excess Forage Growth
- Different Animal Needs
  - Weather
  - Markets
  - Life

Guidelines for Grazing System Design
- Keep livestock within 800 feet of water
  - Improved grazing distribution
  - More uniform manure distribution
  - Increased water consumption.

Grazing doesn’t create fertility... it just rearranges it!
Livestock Watering Systems

You must be able to deliver adequate amounts of quality drinking water, **at the right location**, to have a successful grazing system.

Guidelines for Grazing System Design

- Keep livestock within 800 ft of water
- Make paddocks as near to square as possible

Guidelines for Grazing System Design

- What does “more nearly square” really mean?

![More nearly square](image1)

This is “more nearly square”!

![Less nearly square](image2)

This is “less nearly square”!

Guidelines for Grazing System Design

- Make paddocks as near to square as possible
  - Less fence required

Guidelines for Grazing System Design

- It takes less fence to enclose a square paddock of the same area.

<table>
<thead>
<tr>
<th>Paddock Size</th>
<th>Fence Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 acres</td>
<td>2640 ft</td>
</tr>
<tr>
<td></td>
<td>3260 ft</td>
</tr>
<tr>
<td></td>
<td>3380 ft</td>
</tr>
</tbody>
</table>

If each paddock is 10 acres

Guidelines for Grazing System Design

- Make paddocks as near to square as possible
  - Less fence required
  - Livestock are usually closer to water
Livestock will usually be closer to water in a square paddock

Three options for dividing a 40 acre pasture

Guidelines for Grazing System Design

- Make paddocks as near to square as possible
- Less fence required
- Livestock are usually closer to water
- More uniform grazing distribution

Guidelines for Grazing System Design

- Keep livestock within 800 ft of water
- Make paddocks as near to square as possible
- Follow contour lines of the landscape for paddock boundaries

Guidelines for Grazing System Design

- Follow contour lines of the landscape for paddock boundaries
  - Soil drainage
  - Plant community
  - Slope and aspect
  - Erosion

Grazing System Design

- Make primary subdivisions along contour lines or major soil changes
Guidelines for Grazing System Design

- Keep livestock within 800 ft of water
- Make paddocks as near to square as possible
- Follow contour lines of the landscape for paddock boundaries
- Size paddocks by similar grazing capacity, not similar acres

Lanes

- Use for animal movement only
  - Permanent & Temporary

Animal Movement

**Goals**

- Move livestock from any paddock to any other paddock without going through a third paddock
- Move animals from any paddock to working facilities without going through another paddock

**Lanes**

- Plan lanes for livestock movement only
  - Water only in lanes:
    - 15 - 20 % of manure is deposited in lanes
    - Cattle with water available in the paddock drink about 15% more water per day
    - Most erosion begins in vehicle tracks
Lanes

- **Width**
  - Machinery Movement through lanes
  - Make gates same width as lanes
  - If trail begins to erode, run hotwire down middle of trail.

- Keep lanes on the contour when possible
- Avoid wet areas when possible

Guidelines for Grazing System Design

- Keep livestock within 800 feet of water
- Make paddocks as near to square as possible
- Follow landscape lines for paddock boundaries
- Make paddocks of similar grazing capacity
- Plan lanes for livestock movement only
- Provide secure training facilities

- Provide secure training facilities
  - When exposing new animals to electric fencing they must be trained to respect psychological barriers
  - Area must be a physical barrier
  - Crowd animals within physical barrier with electric fencing
  - Use any material that will be used in the grazing system
  - Goal is to get as many animals educated (shocked) in as short of time as possible.
Guidelines for Grazing System Design

- Keep livestock within 800 feet of water
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- Follow landscape lines for paddock boundaries
- Make paddocks of similar grazing capacity
- Plan lanes for livestock movement only
- Provide secure training facilities
- Plan for adverse weather conditions

Guidelines for Grazing System Design

- Plan for adverse weather conditions
  - Sacrifice paddock for extremely wet conditions.
  - Shelter from extreme cold/wet conditions
  - Shade – during extreme heat

Do cattle need shade?

- It depends!
  - Are cattle grazing endophyte infected fescue?
  - Is the heat index over 100?
  - Have the cattle been selected for short hair coats and heat tolerance?
  - Is plenty of good quality water present?
  - What is the overall condition of the animals?
  - What are the animals accustomed to?

Shade

- Cattle tend to congregate under shade even when they don’t need it
  - Time spent under shade reduces time spent grazing
  - Less grazing time results in less intake and reduced performance

Effects of endophyte and shade

<table>
<thead>
<tr>
<th>Cow/calf (Spring Calvers – Pregnant at Start)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E+S-</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>Cows</td>
</tr>
<tr>
<td>ADG</td>
</tr>
<tr>
<td>△BCS</td>
</tr>
<tr>
<td>△HS</td>
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<tr>
<td>%Preg</td>
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<tr>
<td>Calves</td>
</tr>
<tr>
<td>ADG</td>
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<tr>
<td>△HS</td>
</tr>
</tbody>
</table>
Shade

- Portable shade must be moved often to prevent nutrient displacement and maintain good ground cover.
- Natural shade within the paddocks,
- Shaded areas to move livestock to.

Shade Management

- Moving animals to the shade:
  - Have some paddocks with shade available
  - On hot, high humidity days, turn livestock into paddocks with shade
  - On cooler or low humidity days, rotate livestock to paddocks without shade
- Some producers successfully graze shady paddocks during the day and move to paddocks with no shade at night
- Cull animals with overheating problems.

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Rotation

- Move animals by watching the forage
  - NOT by order of paddock
  - NOT by the calendar.

Layout

- Always One More!

Gates

- How Many Gates Do I Need?
- Always One More!
Gate Locations

Grazing System Design

- Intermittent streams
- One water source
- Variable landscape
- 2,000 ft maximum travel distance to water

Fixed System Design

The starting point for planned grazing management

Can manage each field according to needs: fertility, plant species growth/rest

Fixed System Design (cont.)

The beginning of management intensive grazing

Can you identify potential problems?
Fixed System Design (cont.)

- 8 paddock system
- Water available in every paddock
- Alleyway for ease of livestock movement

Fixed System Design (cont.)

- Fixed system
- Uses permanent fence and watering points

Advantages:
- Relatively low cost on large installations
- Minimal daily labor
- Low maintenance

Disadvantages:
- Relatively high cost on small operations
- Limited management flexibility
- Water in lanes only
- Distance to water

Grazing System Design (cont.)

- Flexible system
- Uses portable fence and water facilities in a framework of permanent fence

Flexible System Design (cont.)

- Minimizes use of permanent fence
- Make corridors as near to parallel as feasible
- Keep fence spacing less than 660 feet

Disadvantages:
- More daily labor required
- More maintenance
- No Winter Water

Advantages:
- Maximum management flexibility
- Lower initial capital cost
- Distance to water
- Works well on rented land
How many paddocks do I need?

- It depends...
  - length of grazing period desired
    - producer goals, livestock performance
  - length of rest period needed
    - based on plant needs, changes seasonally

  Paddock number = rest period needs / grazing period + 1

Rest Period needs

- Rest period needs:
  15 - 20 days during rapid growth
  20 - 30 days during moderate growth
  30 - 40 days during slow growth
  40 - 60 days very slow growth

Grazing Period Needs

- Goal:
  - Grass plant begins regrowth in 5 to 7 days.
  - Do not graze the regrowth in the same grazing period

- Plant based:
  - 2 - 5 days fast growth
  - 5 - 9 days moderate
  - 9 - 12 days slow growth

- Animal performance:
  - 0.5 - 1 day dairy cows
  - 1 - 2 days growing/fattening
  - 2 - 4 days lactating beef cattle, sheep, goats, horses
  - 4 - 7 days dry animals

Yield Distribution: Grazing Season

- Yield distribution changes seasonally:
  - Spring
  - Summer
  - Fall

Guidelines for Grazing System Design

- The larger the grazing unit, the lower the cost/acre to subdivide

- Material cost per acre to subdivide to 10 paddocks ($/acre)

- Acres in the grazing unit

Fixed System Design

- 9 paddock fixed system
- Flexible paddock numbers in hayfields and/or warm season grass
- Water available in every paddock
- Alleyway for ease of livestock movement
- Very flexible, workable system
**How many paddocks do I need?**

- Paddock Number = rest period / grazing period + 1

- Ex:
  - 20 day rest period - spring
  - 3 day grazing period + 1 = 8
  - 40 day rest period - summer
  - 3 day grazing period + 1 = 14

- Or:
  - 40 day rest period
  - 5 day grazing period + 1 = 9

- You either have to have flexible paddock numbers or flexible grazing periods…they both can’t be static!

**Summary**

- There is no perfect system, only those that use good management principles to best fit available resources.
- The most flexible system will have some **combination of permanent and portable** fencing and water.

- Plan for the Future
- Water
- Fence
- Avoid “Drudgery” Work
- Keep It Simple
Electric Fence Material Suppliers

- American GrazingLands Services
  2222 Pahsimeroi Rd
  May ID 83253
  Phone: 208-876-4067
dawn@americangrazinglands.com
  www.americangrazinglands.com

- Gallagher Fence Co.
  www.gallagherusa.com

- Kenkove Fence Supplies
  11409 East 218th St.
  Peculiar, MO
  800-536-2683
  www.kenkove.com

- PowerFlex Fence
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  Mountain Grove, MO 65711
  888-251-3934
  www.powerflexfence.com

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