Design and Layout of Grazing Systems

Mark Green
Lead Resource Conservationist
Natural Resources Conservation Service

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

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.

Manure Distribution

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

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

Guidelines for Grazing System Design

- What does "more nearly square" really mean?

This is "more nearly square"!
This is "less nearly square"!

Guidelines for Grazing System Design

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

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.

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

Three options for dividing a 40 acre pasture

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

Figure 2. Impact of distance from water on temporal utilization rate in square and rectangular 10 acre paddocks.

R-square=.82

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

Guidelines for Grazing System Design

- Size paddocks of similar grazing capacity
- Keep diet (availability) more consistent
- Ease of rotation management
- Can maintain desired rest period regardless of order pastures are grazed

Lanes

- Use for animal movement only
  - (Not water?)
  - 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
  - 25 feet has worked well
  - Make gates same width as lanes
  - If trail begins to erode, run hotwire down middle of trail.

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

Lanes
- **Width**
- Keep lanes on the contour when possible
- Avoid wet areas when possible
- Use lanes for access to winter water

Guidelines for Grazing System Design
- 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
- 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
- Plan for adverse weather conditions

Guidelines for Grazing System Design

- Plan for adverse weather conditions
  - Sacrifice paddock for extremely wet conditions.
  - During drought?
  - 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

Shade

- Shade is probably needed to help reduce heat stress any time the heat index is 100 or above
  - Especially if livestock are grazing endophyte infected fescue

Effects of endophyte and shade

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<th>E+S+</th>
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</table>
Shade

Shade can be:
- Portable,
  - 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.

Rotation

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

Layout

Multi-Wire
One wire
Multi-Wire, Weaning across the fence

Gates

How Many Gates Do I Need?
Always One More!

Angle Gates

Set Cross-fence post back
Gate Locations

Grazing System Design

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

Grazing System Design (cont.)

- Fixed system
  - Uses permanent fence and watering points

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

**Advantages:**
- Maximum management flexibility
- Lower initial capital cost
- Distance to water
- Works well on rented land

**Disadvantages:**
- More daily labor required
- More maintenance
- No Winter Water
Fixed System Design (cont.)

- 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

Guidelines for Grazing System Design

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

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

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

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

Yield Distribution: Grazing Season

- GRASS
- LEGUME

Yield Distribution (tons/A): Spring, Summer, Fall
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

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

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.
Electric Fence Material Suppliers

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

- Gallagher Fence Co.
  www.gallagherusa.com

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

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

- MFA Ag Supply
  Various Locations
  -- Gallagher Products