Design and Layout of Grazing Systems

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Components of the Grazing System

- Landscape
- Forage
- Livestock
- Water
- Fence
FLEXIBILITY
Guidelines for Grazing System Design

- Keep livestock within 800 feet of water
  - Improved grazing distribution
  - More uniform manure distribution
  - Increased water consumption
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?

This is “more nearly square”!

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.

2640 ft  3260 ft  3380 ft

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
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

- 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
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
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
- Make paddocks of similar grazing capacity, not similar size
- Use lanes for livestock movement
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
  • 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.
Lanes

- **Width**
- Keep lanes on the contour when possible
Lanes

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

- 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
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

### Cow/calf

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Shade can be

- Portable, Portable shade must be moved often to prevent nutrient displacement and maintain good ground cover
- Natural shade within the paddocks, or
- Shaded areas to move livestock to.
- Some producers successfully graze shady paddocks during the day and move to paddocks with no shade at night
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
- Cull animals with overheating problems.
Move animals by watching the forage

- NOT by order of paddock
- NOT by the calendar.
Layout

One wire

Multi-Wire
Layout

Gate Locations

Working Pens
Layout

Gate Locations
Layout

- Lanes vs. Pie Shape
Grazing System Design

- 140 acre pasture
- 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

- Flexible system
  - Uses portable fence and water facilities in a framework of permanent fence
Grazing System Design (cont.)

- Fixed system
  - Uses permanent fence and watering points
Fixed System Design (cont.)

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 mainly in lanes
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
Flexible System Design (cont.)

- Temporary fence
- Portable Water Tank
- Above Ground Water Pipe
- Portable Water Tank
- Temporary fence
Flexible System Design (cont.)

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

Advantages:
• Maximum management flexibility
• Lower initial capital cost
• 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
The larger the grazing unit, the lower the cost/acre to subdivide.
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.