

Comparison of Various Grazing Management Techniques

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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/profitable system that fits your resources and meets your objectives

The First Step - Balance Livestock Numbers with Forage Supply

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

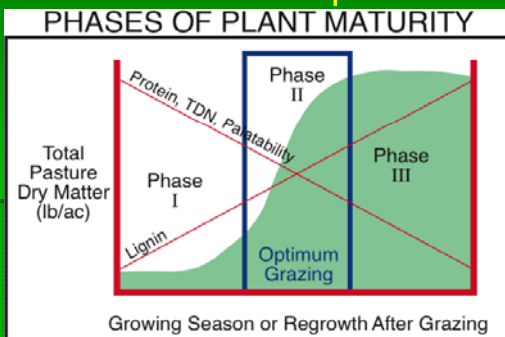
Carrying capacity: The stocking rate that provides a target level of performance while maintaining the integrity of the resource base.

Stocking rate has an effect on forage availability and intake

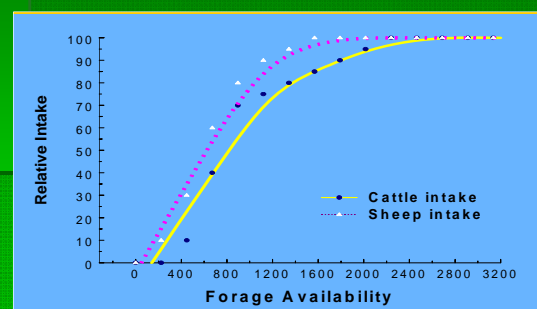
Carrying capacity of pasture is determined by four factors

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

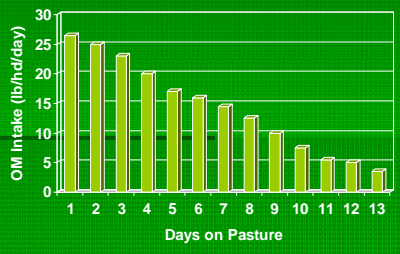
The Yield - Quality - Persistence Compromise



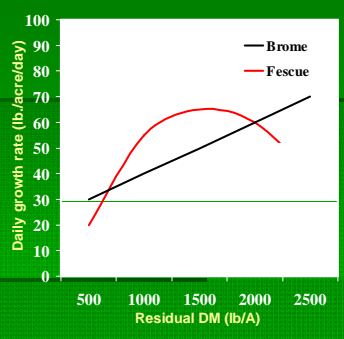
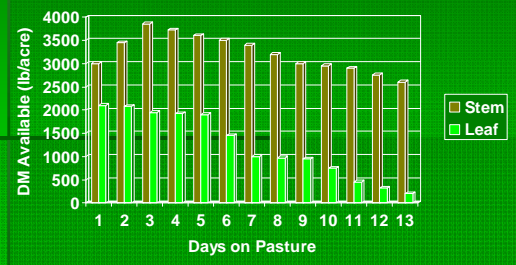
Effect of forage availability on the relative dry matter intake of cattle and sheep



Impact of Days on Paddock on Organic Matter Intake

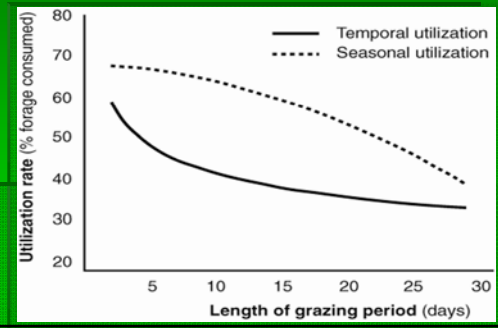


Impact of Days on Paddock on Change in Sward Composition



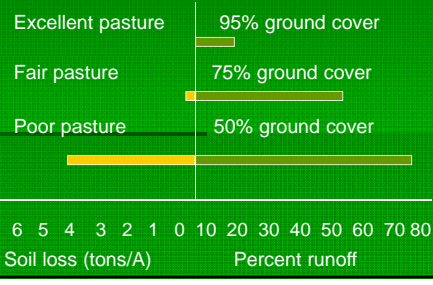
Increasing residual level accelerates plant regrowth following grazing. (Jim Gerrish, FSRC)

Grazing Period Length Affects Utilization



Effect of Pasture Management on Soil Erosion and Runoff

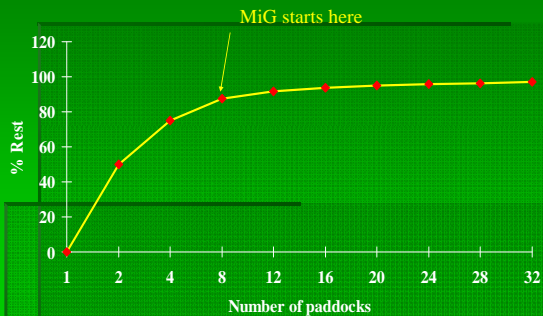
3 inches of rainfall in 90 minutes, 10% slope, silt loam soil (University of Nebraska & USDA-SCS, 1937)



How many paddocks do I need?

- *It depends*
 - *length of grazing period desired*
 - *producer goals, livestock performance, environmental goals*
 - *length of rest period needed*
 - *Based on plant needs*
- rest period
grazing period + # of herds = paddock #

How much rest do additional paddocks provide?



Grazing Techniques

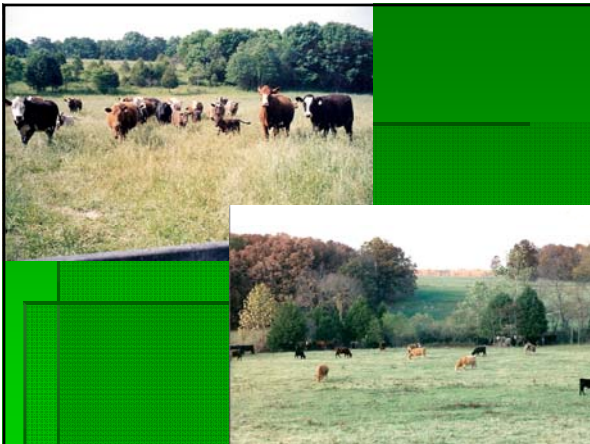
- Rotational Grazing
- Management-intensive Grazing
- Mob Grazing – High density grazing – Tall grazing
- New Zealand style grazing – 3 leaf stage/close grazing

Rotational Grazing

- Grazing method that utilizes recurring periods of graze and rest among 4 or more paddocks
 - 4 – 7 pastures
 - Grazing Periods: 7 - 14days
 - Rest Periods: 20 – 40 days
 - Stock density: 5000 – 10,000 lbs./ac
 - Utilization: 30 – 45%
 - Higher degree of selectivity

Rotational Grazing

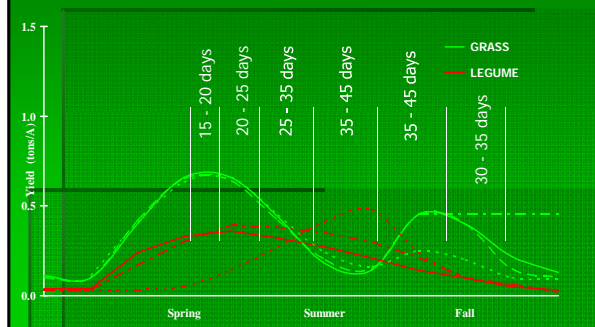
- Spot grazing still a problem
- Can manage to maintain legumes
- Due to longer grazing periods and the animals ability to selectively graze, the more palatable plants get overgrazed while less palatable more mature plants are relatively untouched
- Weakened plants due to overgrazing allows weeds to compete



Management-intensive Grazing

- A goal driven approach to managing grassland resources for long term sustainability; ≥ 8 pastures based on plant growth and animal needs
 - 8 – 80+ pastures
 - Grazing periods: 0.5 day – 5 days
 - Rest periods: 20 – 40+ days
 - Stock density: 10,000 – 100,000 lbs.
 - Utilization: 50 – 70%
 - Lower selectivity

Rest Period Needs: Grazing Season



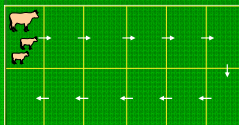
Plant Growth and Management:

During grazing periods: control stubble height

- not too low—keep growing points
- not too low—good photosynthesis
- not too low—keep roots growing
- Not too low—adequate animal intake

Between grazing periods: schedule rest periods

- allow photosynthesis
- allow leaves to regrow—bite size
- allow leaves to regrow—replenish carbohydrates
- allow “vegetative reproduction”



Optimum Paddock #'s based on Livestock Type (Rule of Thumb for 20 - 40 days rest)

Livestock type	Grazing Period (Days)	Paddock #
Dairy & Beef finishing	0.5 - 1	20 - 80
Dairy Heifer & Beef Stockers	1 - 2	16 - 40
Cow/calf, Sheep, Goats, Horses	2 - 5	8 - 16



Mob Grazing - High Density Grazing

- Grazing by relatively large numbers of animals at a high stock density for a short period of time
 - Paddock Number: Infinite
 - Grazing Period: Minutes - 1 day
 - Rest period: 30 days - 180 days
 - Stock Density: 100,000 lbs - 500,000 + lbs.
 - Utilization: 60 - 80%
 - Lowest selectivity

Mob Grazing

- Developed and promoted by Holistic Resource Management
- Goal is to use animal impact to improve the land
- Grazing a taller fully rested plant vs immature plant. (late 2nd stage into phase 3)
- If you overgraze, give a longer rest period, let tops and roots fully recover
- Ideally, 60% consumed, 20% trampled, 20% standing residual

Mob Grazing

Possible Benefits

- Soil health/Soil Building
- Increased organic matter
- Improved Manure Distribution
- Control of unwanted plants

Possible Problems

- Lowered Animal Performance
- "Scorched earth effect" – utilization too high, not leaving enough residual

Mob Grazing

2 modes

- Landscape – higher density to create a greater effect on the landscape
- Animal performance – a little lower density to allow animals to select the best and tramp the rest

Most valuable tool is a dry bred cow for landscape mode. Very low nutritional requirements. Will eat about any forage.



New Zealand Style Grazing – 3 leaf stage

- Form of MiG based on grazing at 3 leaf stage followed by short rest periods for high quality and high utilization, monitored by using the grazing wedge
 - Paddock Number: Infinite
 - Grazing Period: 6 hours – 1 day
 - Rest Period: 14 – 28 days
 - Stock Density: 50,000 lbs. – 250,000 lbs
 - Utilization: 70 – 80%
 - Low selectivity

New Zealand Style Grazing

Utilizes the Grazing Wedge

- Measure each paddock every week
 - Yardstick
 - Pasture probe
 - Rising plate meter
- Use information to make management decisions:
 1. What paddock to graze next
 2. What paddock(s) to fertilize
 3. What paddock(s) to harvest as hay/baleage
 4. When supplementation may be needed

The Grazing Wedge



New Zealand Grazing – residual heights

- | | |
|---|--|
| <ul style="list-style-type: none"> ▪ Residual grazing height <ul style="list-style-type: none"> • Traditional MIG, leave 3-4" residual | <ul style="list-style-type: none"> ▪ Residual grazing height <ul style="list-style-type: none"> • New Zealand "tight" grazing |
|---|--|



Priority of Plant Growth/Regrowth Fourth Leaf Stage

- At full third leaf stage, carbohydrate reserves reach maximum; root and tiller growth is fully active
- This is the minimum stage for grazing
- When 4th leaf emerges, the first (original) leaf begins to die
- Most grasses will have no more than 3 LIVE LEAVES at any point in time
- Pasture quality begins to decline and is wasted
- The 3 to 3½ leaf stage is the optimum stage for grazing (early 2nd stage)

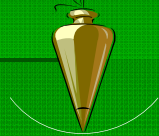
Effects of Grazing at the 3 Leaf Stage

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|--|--|
| <ul style="list-style-type: none"> ▪ Decreased plant persistence (replant every 3 - 5 years) ▪ Increased bare soil ▪ Increased weed pressure ▪ Forage shortages during dry weather ▪ Possible reduced intake due to decreased bite size | <ul style="list-style-type: none"> ▪ Improved forage quality ▪ Decreased shading of legumes and grass tillers ▪ Decreased dead leaf (wasted forage) ▪ Increased utilization ▪ Decreased chance of mold/fungus on dead leaf material |
|--|--|

Summary

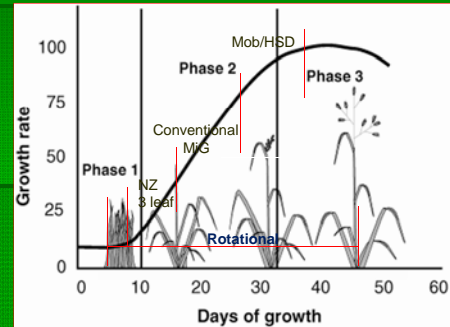
- All techniques have some benefits
- There are trade offs
- All must be monitored & managed to be effective
- There are conditions under which any one of these would be the prescription of choice

Each of these techniques works like a pendulum – when the pendulum swings too far to either side we may give up something on the other side



With managed grazing, mistakes can be corrected with adequate rest

Plant Growth Phases



Grazing Method	Diversity	Persistence	Utilization	Forage quality	ADG/ Milk	Gain/ AC	Wild-life	Soil Health
Rotational grazing	0	0	0	+/0	+/0	0	+/0	0
MiG	+	+	+	+	+	+	+	+
Mob Grazing	++	+	++	0/+	-	++	+	++
New Zealand	+	-	++	++	++	++	-	-



Which grazing management technique will help you meet your goals with your available resources?

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