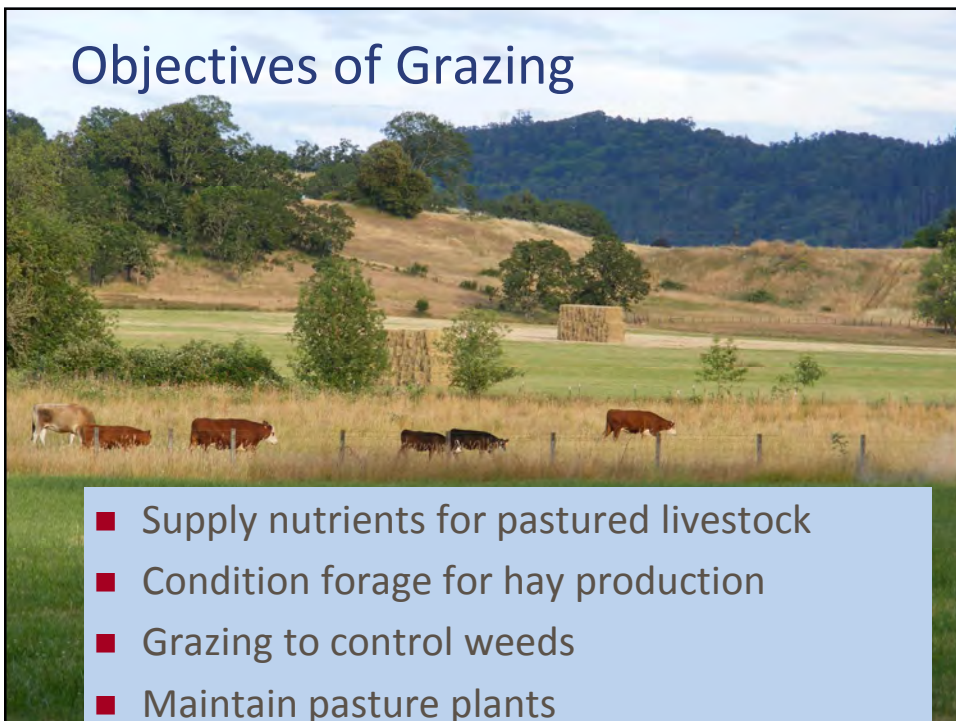
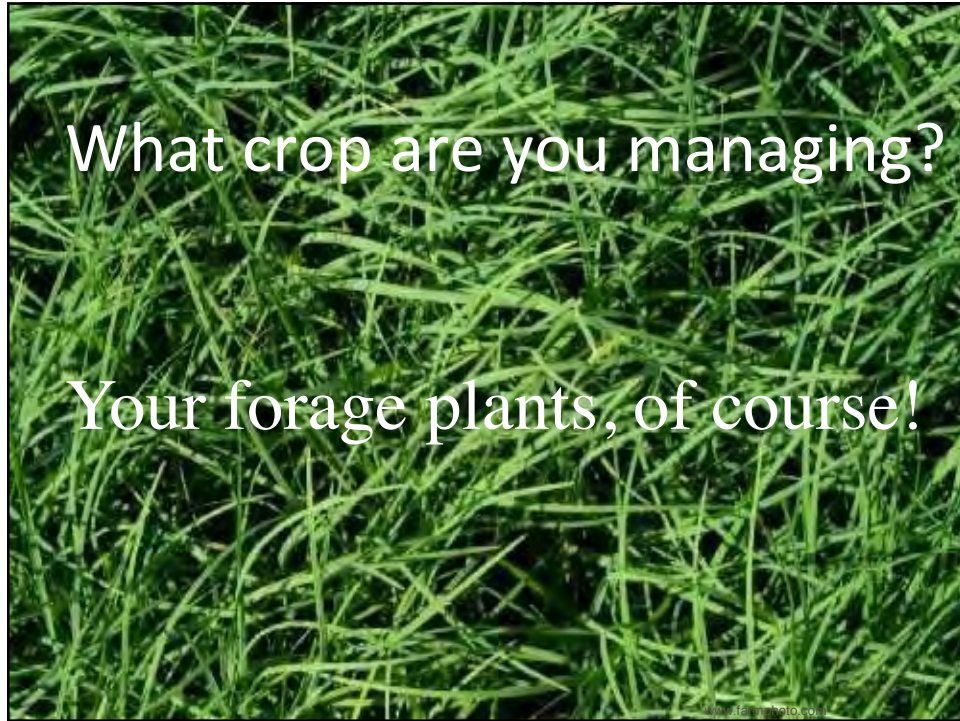


Grazing Basics: Plants & Animals



Objectives of Grazing

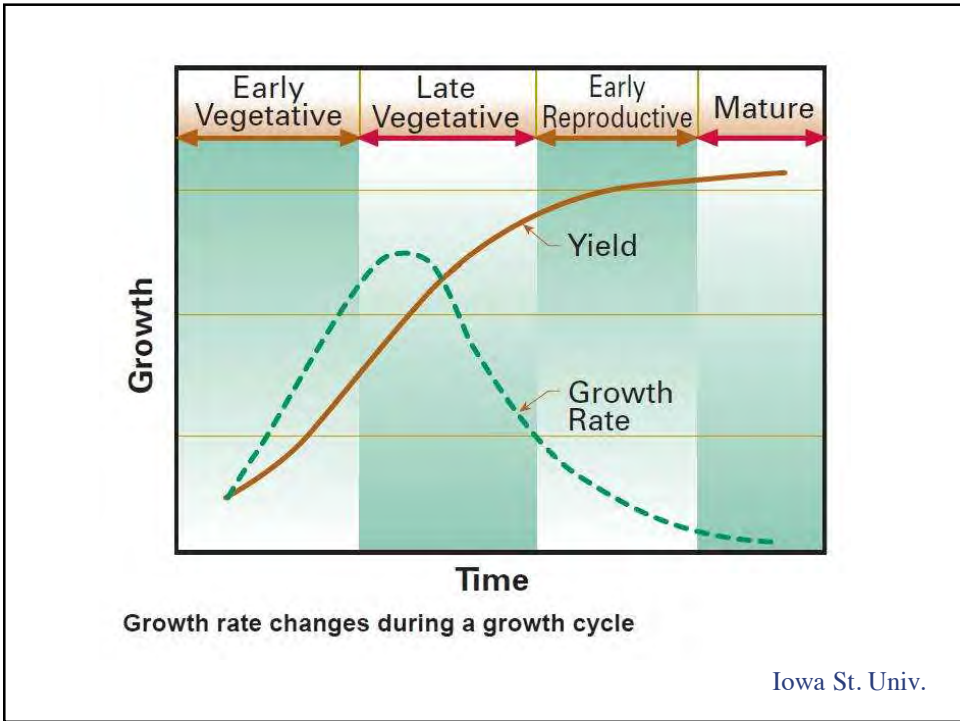
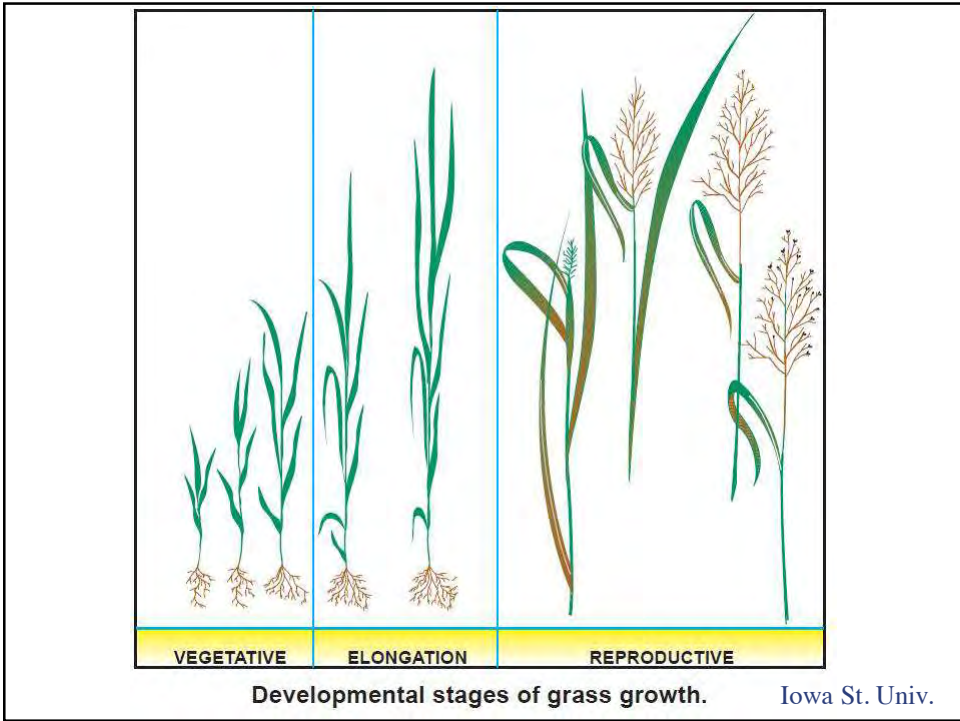


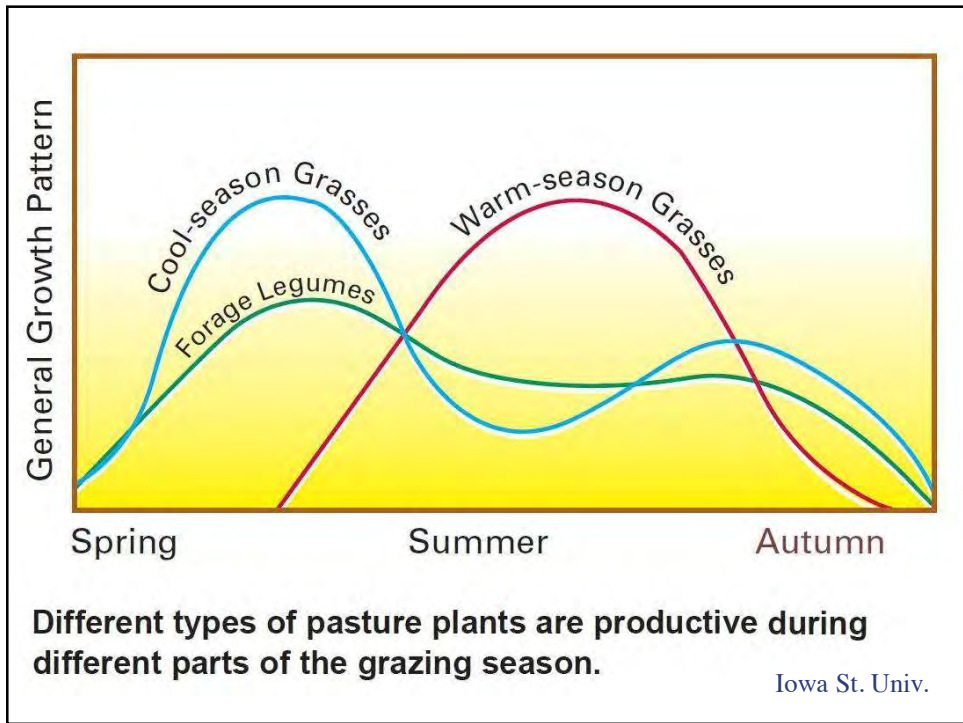
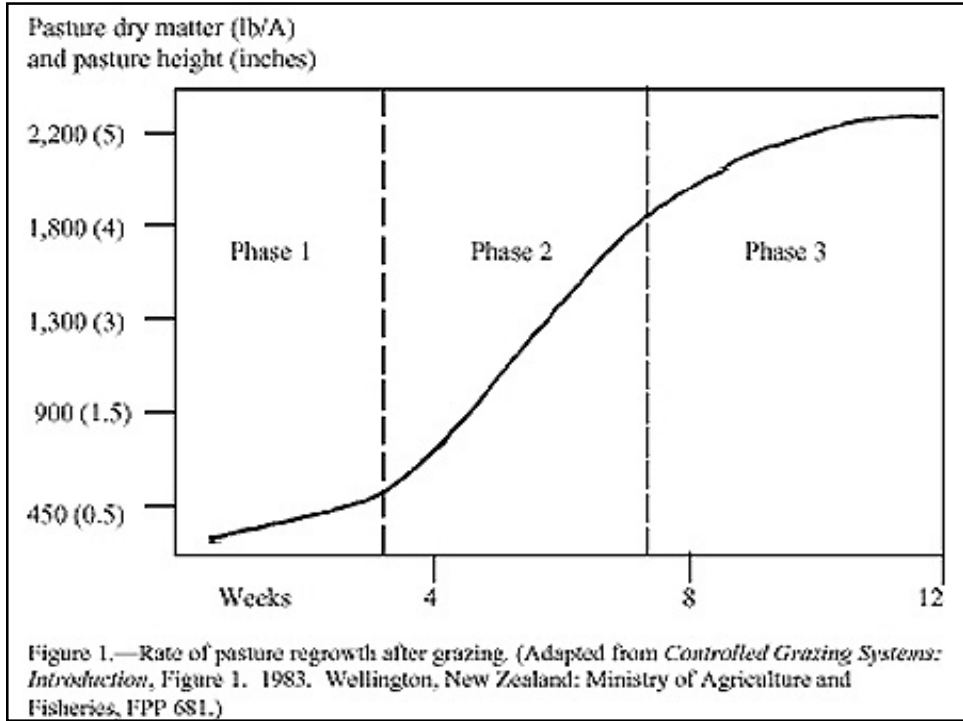


Presentation Outline

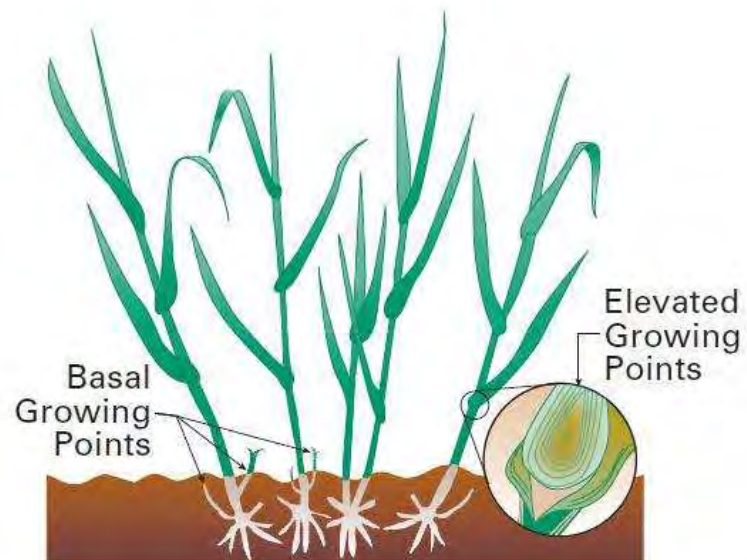
- Growth and Re-growth
- Plant Response to Grazing
- Forage Quality
- Forage Quantity
- Animal Numbers
- Controlled Grazing

A photograph showing a flock of sheep grazing in a lush green field. The sheep are in the foreground, and the background shows a rolling landscape with trees and a fence line under a bright sky.



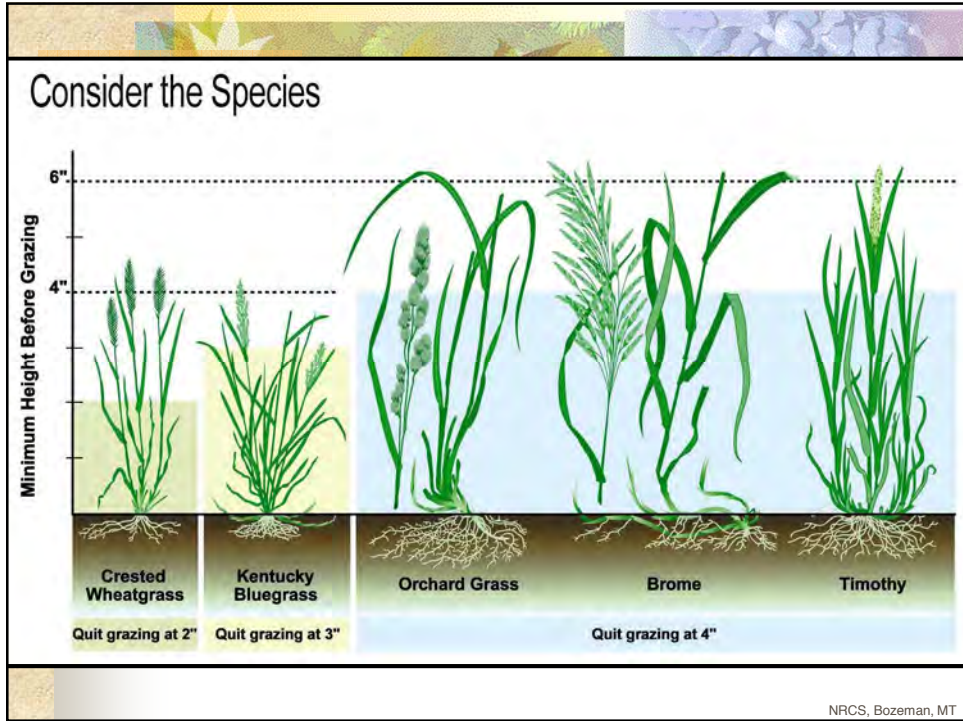


Growing Points



Elevated growing points are vulnerable to removal by grazing.

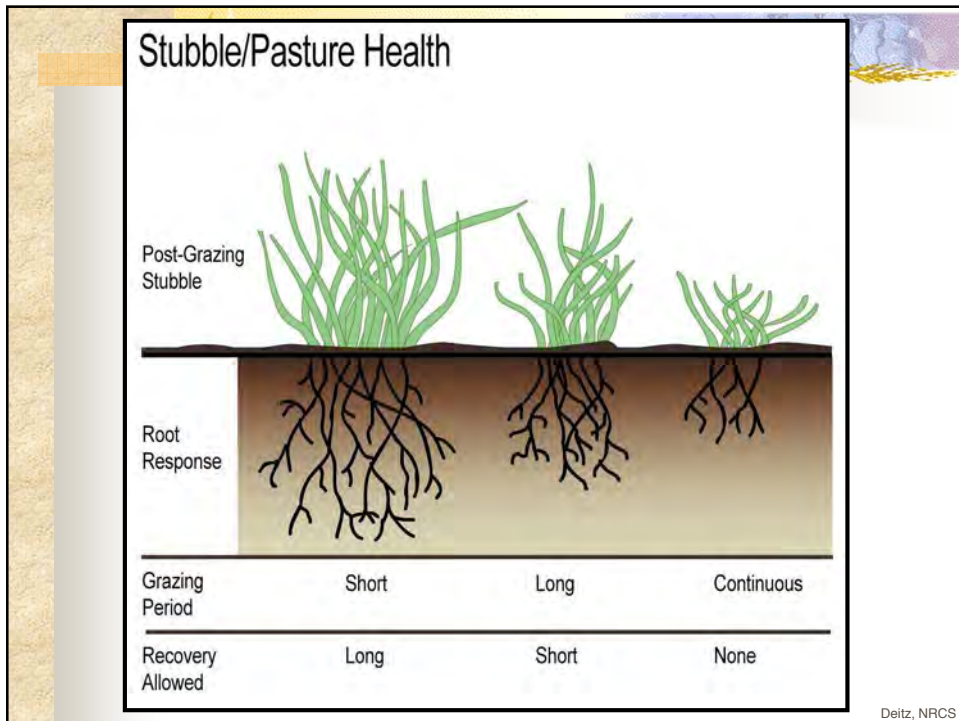
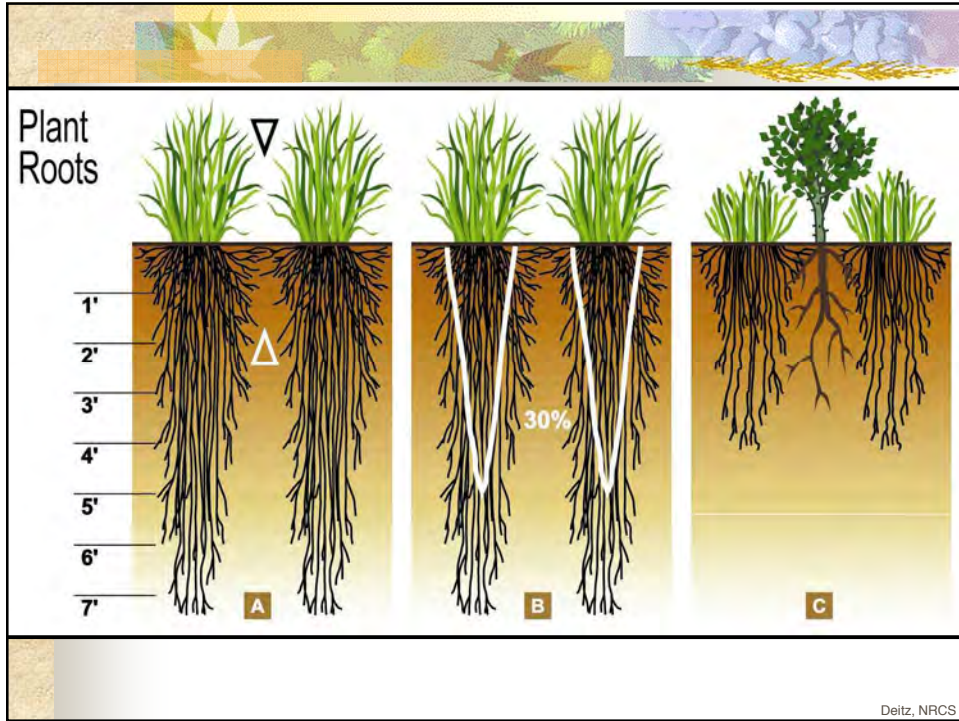
Iowa St. Univ.



Recommended Residual Heights

Grass	Height (inches)
Bentgrass	1 ½
Perennial Ryegrass	2
Orchard Grass	3 – 4
Smooth Brome	3 – 4
Tall Fescue	3 – 4
Bluegrass	3 – 4
Meadow Brome	3 – 4
Timothy	4 – 6

OSU Ext. Serv.



“Grass is King, Protect the Crown”



Protect the growing points, crown, and roots (especially in fall).

Grass Regrowth Video

<http://beef.osu.edu/UKoats/orchgras.wmv>



Day 1 (24 hours after clipping)
1" Continuous 3.5" Rotational



Day 2
1" Continuous 3.5" Rotational



Day 5

1" Continuous 3.5" Rotational



Day 6

1" Continuous 3.5" Rotational



Day 3

1" Continuous 3.5" Rotational



Day 4

1" Continuous 3.5" Rotational



Presentation Outline

- Growth and Re-growth
- Plant Response to Grazing
- Forage Quality
- Forage Quantity
- Animal Numbers
- Controlled Grazing



Forage Plant Characteristics

- Forage Quality
 - Young, tender growth vs. older, fibrous growth



Forage Value

& Plant Maturity

- As plants mature:
 - Fiber increases:
Acid detergent fiber (ADF) & Neutral detergent fiber (NDF)
 - Protein & energy decrease
 - Digestibility decreases (ADF factor)
 - Feed intake decreases (NDF factor)

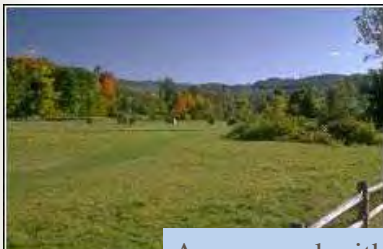


Pasture in peak growing season is of high quality

Pasture as the season progresses...
can decrease in quality



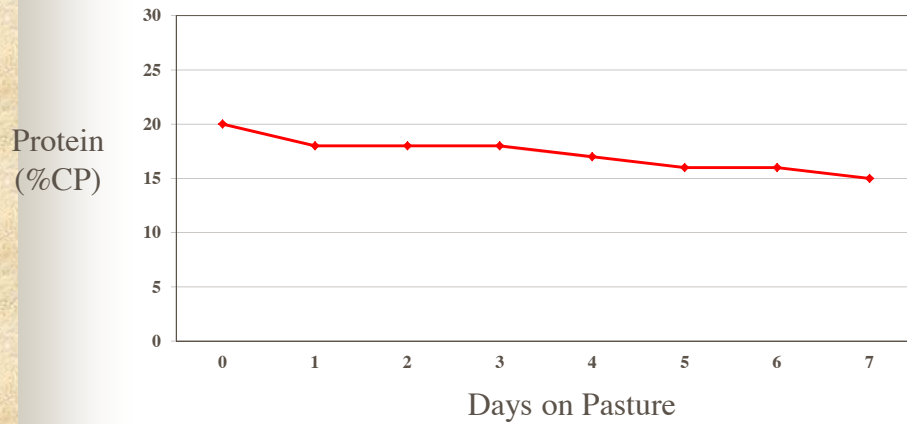
Variation in Forage Quality



Among and within the seasons

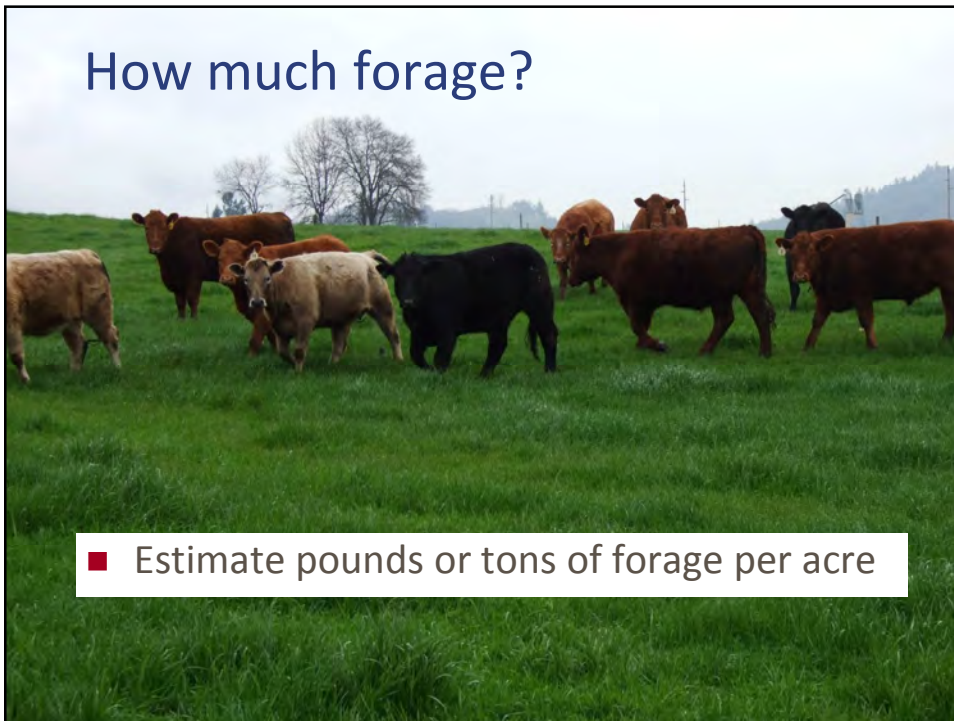


Forage Quality vs. Grazing Time



Animals are selecting out high quality forages first...

How much forage?



■ Estimate pounds or tons of forage per acre

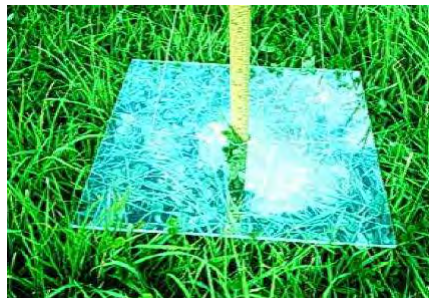
Estimating standing forage I

- Collect forage from a specified area, weigh it, calculate yield in lb/ac.
- See Calculating Available Forage at



http://extension.usu.edu/files/publications/publication/NR_RM_03.pdf

Estimating standing forage II



- Use a plate meter that you lay over the top of the forage and measure the height.
- Falling Plate Meter (W.VA Univ.)

<http://www.wvu.edu/~agexten/forglvst/fallplate.pdf>

Estimating standing forage III



www.agry.purdue.edu

Monitor grass height

<http://www.wvu.edu/~agexten/forglvst/passmass.pdf>

Estimating Pasture Forage Mass: Putting it together

- Cut and weigh an area of forage and calculate pounds of dry matter (DM) per acre
- Measure height from the stick or plate meter
- Assign a density (thin, average, thick)
- Chart height, density, and lb DM/acre

<http://www.wvu.edu/~agexten/forglvst/passmass.pdf>

Presentation Outline

- Growth and Re-growth
- Plant Response to Grazing
- Forage Quality
- Forage Quantity
- Animal Numbers
- Controlled Grazing



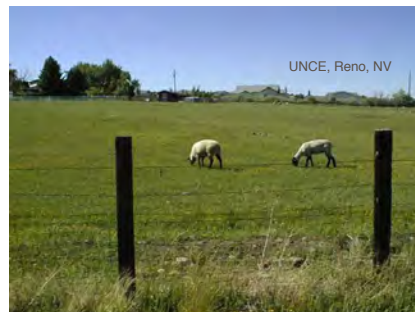
■ CARRYING CAPACITY


- # of animals a pasture can accommodate for the grazing season without overgrazing.
- Based on amount of forage produced



■ STOCKING RATE

- # of animals a pasture can accommodate at a time without overgrazing





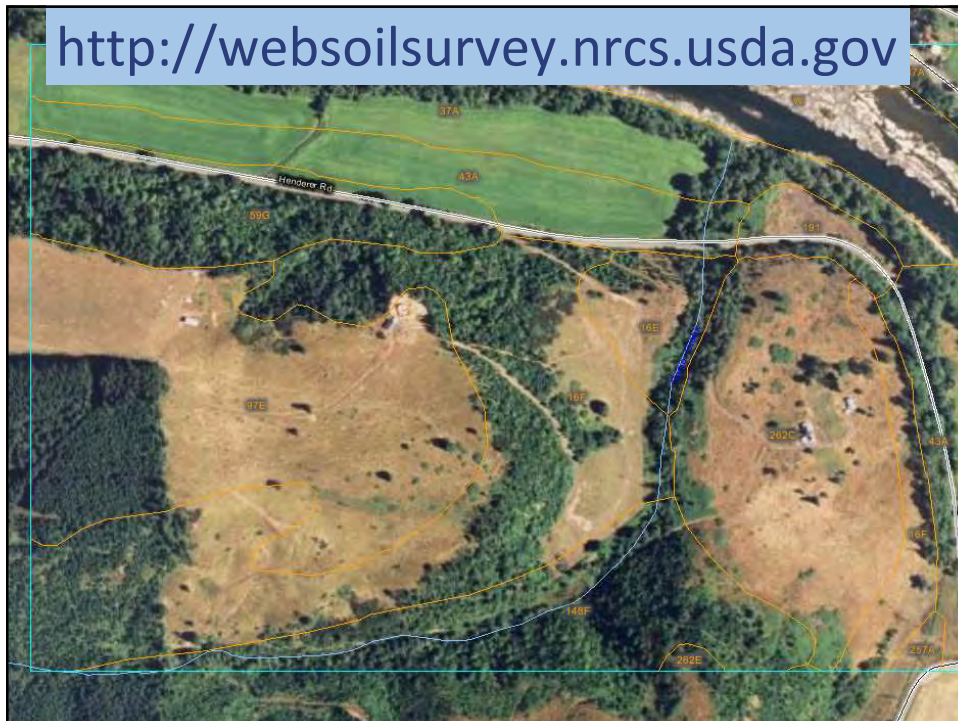
Animal Unit (AU)	
Description	AU
1,000 lb cow +/- calf	1.0
1,400 lb cow	1.4
500 lb steer	0.6
5 - 7 sheep	1.0
1,000 lb horse	1.5

Animal Unit Month (AUM) = Forage

- Animal Unit (AU)
 - 1000-pound cow +/- calf
- Animal Unit Month (AUM) = lbs of forage required for one animal unit for one month
- 1000 lb cow eats ~ 2.5% body wt in feed/day
 - $1000 \text{ lb} \times 0.025 = 25 \text{ lb daily feed intake}$
 - $25 \text{ lb/day} \times 30 \text{ days/month} = 750 \text{ lb/mo}$

Annual Pasture Production

Is your land irrigated? ↓	AUM/acre		
	FIELD CONDITION		
	Poor	Fair	Good
YES	<4	4 to 7	7 to 9
NO	<1	1 to 2	2 to 3



Yields of Non-Irrigated Crops (Component): Pasture (AUM)

Yields of Non-Irrigated Crops (Component): Pasture (AUM)— Summary by Map Unit — Douglas County Area, Oregon (OR649)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
10G	Atring-Lamine complex, 60 to 90 percent slopes		0.1	0.0%
16E	Bateman silt loam, 12 to 30 percent slopes	7.52	6.1	2.6%
16F	Bateman silt loam, 30 to 60 percent slopes		52.3	21.8%
37A	Chapman-Chehalis complex, 0 to 3 percent slopes	11.00	28.1	11.7%
43A	Coburg silty clay loam, flooded, 0 to 3 percent slopes	7.94	22.0	9.2%
59G	Digger-Preacher complex, 60 to 90 percent slopes		16.4	6.9%
97E	Honeygrove gravelly clay loam, 3 to 30 percent slopes	9.74	43.7	18.2%
148F	McDuff-Absaquil-Honeygrove complex, 30 to 60 percent slopes		20.8	8.7%
191	Pits		4.0	1.7%
257A	Waldo silty clay loam, 0 to 3 percent slopes	7.00	0.9	0.4%
262C	Windygap silt loam, 2 to 12 percent slopes	7.66	27.5	11.5%
262E	Windygap silt loam, 12 to 30 percent slopes	8.05	0.5	0.2%
W	Water		17.2	7.2%
Totals for Area of Interest			239.4	100.0%

Annual production of forage

- Acres of pasture
- AUMs of forage per acre
- Total forage production

_____ acres X _____ AUMs/acre

= _____ AUMs

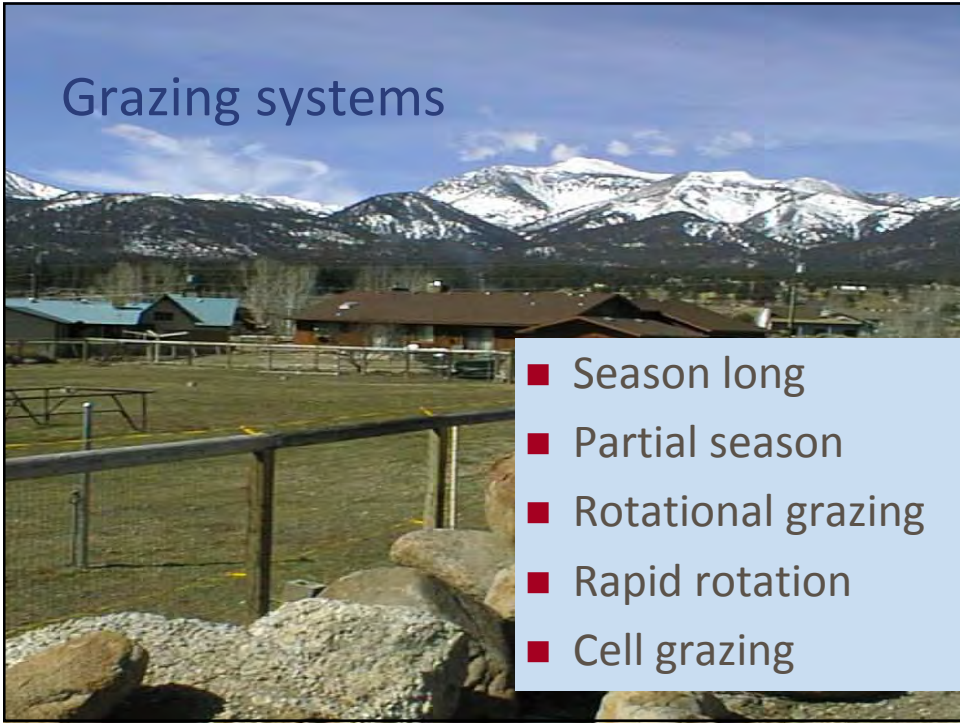
Balancing feed and forage using AUMs

- Determine whether your animals' feed and forage requirements balance with your land's production
- Feed is defined as hay you provide an animal
- Forage is what your animals consume by grazing.

AUM Requirements

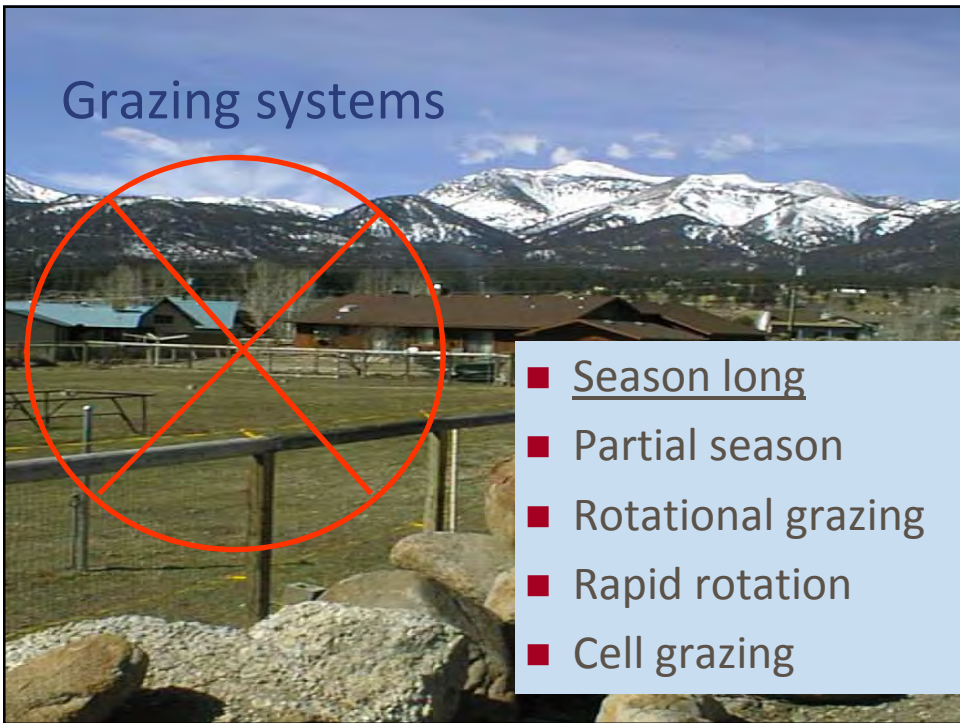
Animal	AU	# animals	# months	Total AUMs
Cow	1.00	X _____	X _____	= _____
Horse	1.25	X _____	X _____	= _____
Sheep	0.20	X _____	X _____	= _____
Llama	0.30	X _____	X _____	= _____
Goat	0.20	X _____	X _____	= _____
	Total Required =			

Grazing systems



- Season long
- Partial season
- Rotational grazing
- Rapid rotation
- Cell grazing

Grazing systems



- Season long
- Partial season
- Rotational grazing
- Rapid rotation
- Cell grazing

Partial season grazing



NRCS, Bozeman, MT

Simple Rotational Grazing



www.agry.purdue.edu/ext

Move livestock from pasture to pasture.
Each pasture is grazed only once per season.



Getting Started with Controlled Grazing

- Management Intensive Grazing
 - Divide pastures into several sections
 - Graze for a number of days, rest for a number of days

Eight Paddock System



Flexibility is Key to Management



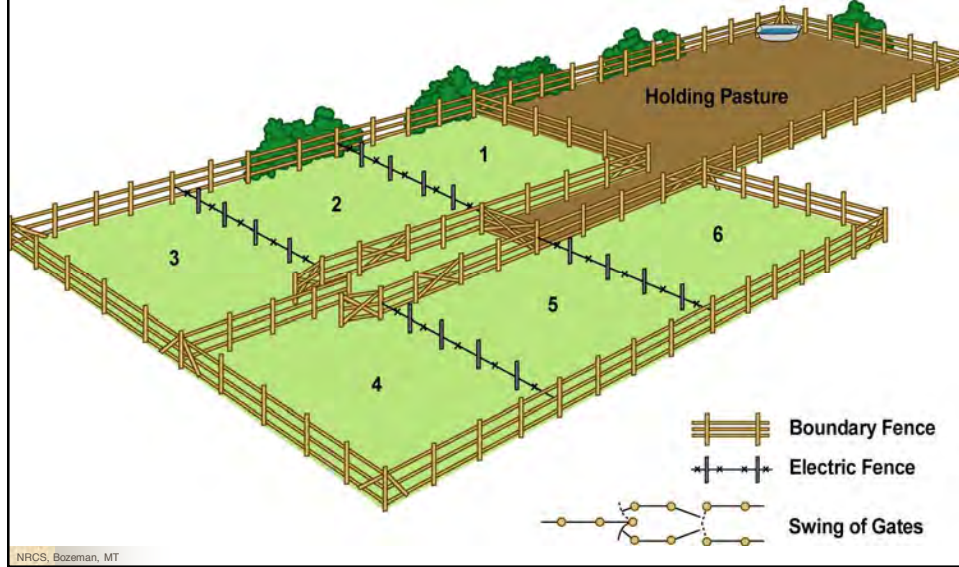
Variables are pasture growth rate, # of pastures, stocking rate, and rotation frequency

Sacrifice Area

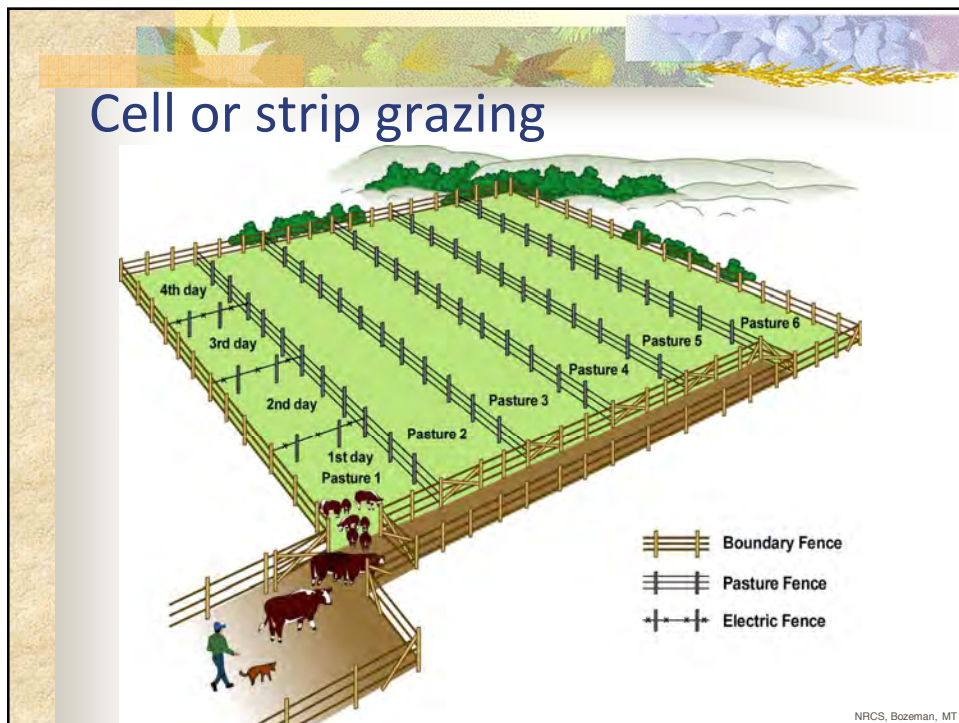


- Sacrificed to save the rest of the pastures
- Close to barn, hardened ground, away from waterways, hillside area, low productivity, etc.
- Over seed annual ryegrass in spring

Rapid rotation or short duration grazing



Cell or strip grazing



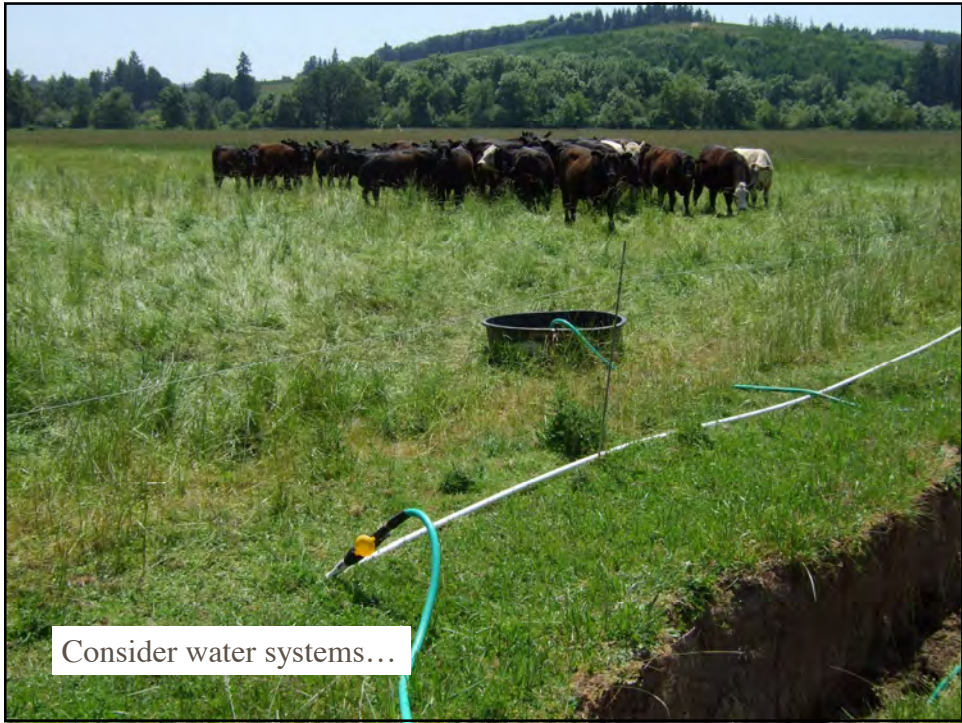
Which grazing system is right for me?



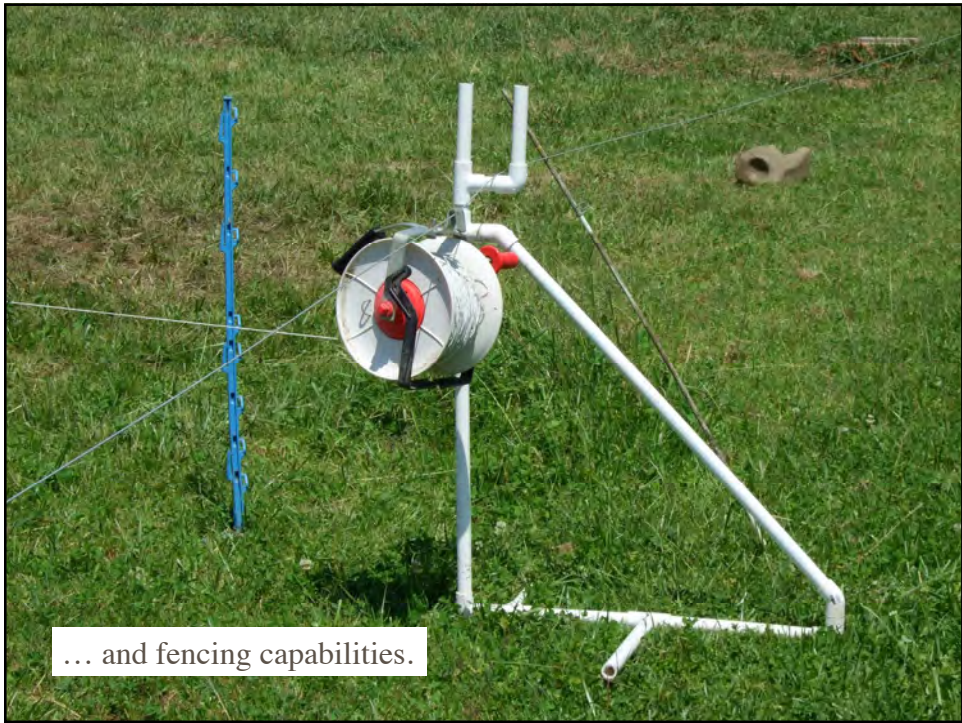
Consider existing system...



... and workforce.



Consider water systems...



... and fencing capabilities.

Which grazing system is right for me?

CONSIDERATIONS:

- Quality of pasture forage
- Species of grazing animal
- Costs
- Time – yours!

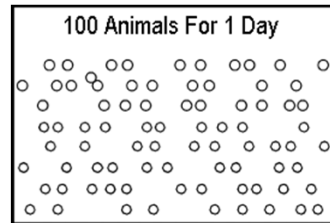
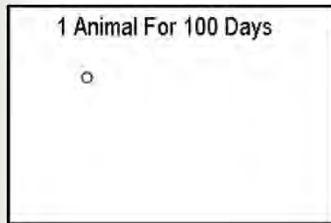


Overgrazing occurs two ways:

- Leaving stock in a pasture too long
- OR
- Bringing them back too soon



Which will cause more overgrazing?



The stocking rate of both paddocks is identical: 100 Animal Days per Acre.
The effect on the paddocks will be much different.

Grazing Behavior



✖ Cattle can't graze well at less than 1/2"

- Sheep and goats can graze at soil surface



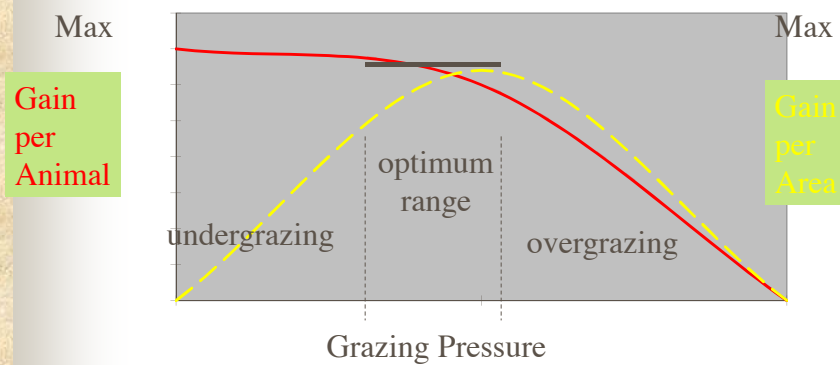
Feed Intake (FI)

- $FI = \text{time} \times \text{bite size}$
X bites per minute
- The taller, more dense the forage, the more forage an animal will get per bite
- If forage is short, animals waste energy trying to take the last little bites



Animal Response to Grazing Management

Stockers



Monitoring

- Use observations and common sense



If there isn't enough feed in your pasture, you are either overstocked or not allowing enough rest, regardless of what the calculations said.



www.agry.purdue.edu

<http://extension.oregonstate.edu/douglas/lf>
(Click on 1. Info, click on 3. Pasture & Forage)

■ SUGGESTED READING

- Pasture & Grazing Management in the NW
- Grass is King Protect the Crown
- Summer & Fall Pasture Management
- Improving Pastures: Greener Pastures
- Forage Types
- Pasture & Hayland Renovation



Steps to effective grazing management

- Graze to the desired stubble height (take half, leave half)
- Allow adequate rest periods for regrowth
- Don't re-graze until key species at desired height
- Be flexible – might move out of one paddock sooner than expected. Consider Overall pasture growth.



Grazing schedules

- Be flexible
- Plan ahead
- Monitor: check your footprint and adjust to grass condition
- Adjust original plan
- Keep records



Keep records

- Grazing order of your pastures
- Start grazing and stop grazing dates for each pasture
- Number of animals on the pasture
- General health and productivity of the pasture
- Seasonal variations and weather



Tips for improving your grazing management

- Control weeds and undesirable plants in pastures and adjacent areas
- Prevent or reduce differential or selective grazing
- Mow pastures, especially those dominated by bunchgrasses, if selective grazing has occurred



Management to Improve Forage Longevity (Persistence)

- Add supplemental forage when pasture is insufficient (quantity & quality)
- Mow excess when forage is in excess
- Adjust stocking rate (# animals/acre)