

# Grazing Management

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MAY 16



# Before we start, answer these questions:

- What kind and how many animals can you have?
- Are your soil and irrigation systems adequate for your goals?
- How will you protect water resources on your property?
- Are your existing facilities adequate for your goals?
- Do you have a plan in place to upgrade systems and facilities that are not adequate?



# We'll be covering

- Benefits of implementing grazing management
- Steps to effective grazing management
- Estimating available feed and forage
- Monitoring your land by making footprints
- Grazing systems and pasture configurations
- Grazing tips

# Why manage grazing?

- Increases forage production and saves money
- Increases grazing capacity
- Improves use of forage supply throughout the year



# Why manage grazing?

- Allows for maximum vigor of key species
- Allows seed production by key species
- Allows seedling establishment of key species



# Why manage grazing?

- Reduces erosion
- Improves water quality
- Improves range or pasture condition



# Why manage grazing?

- Allows for flexibility
- Enhances wildlife habitat
- Maximizes efficiency of your time and resources

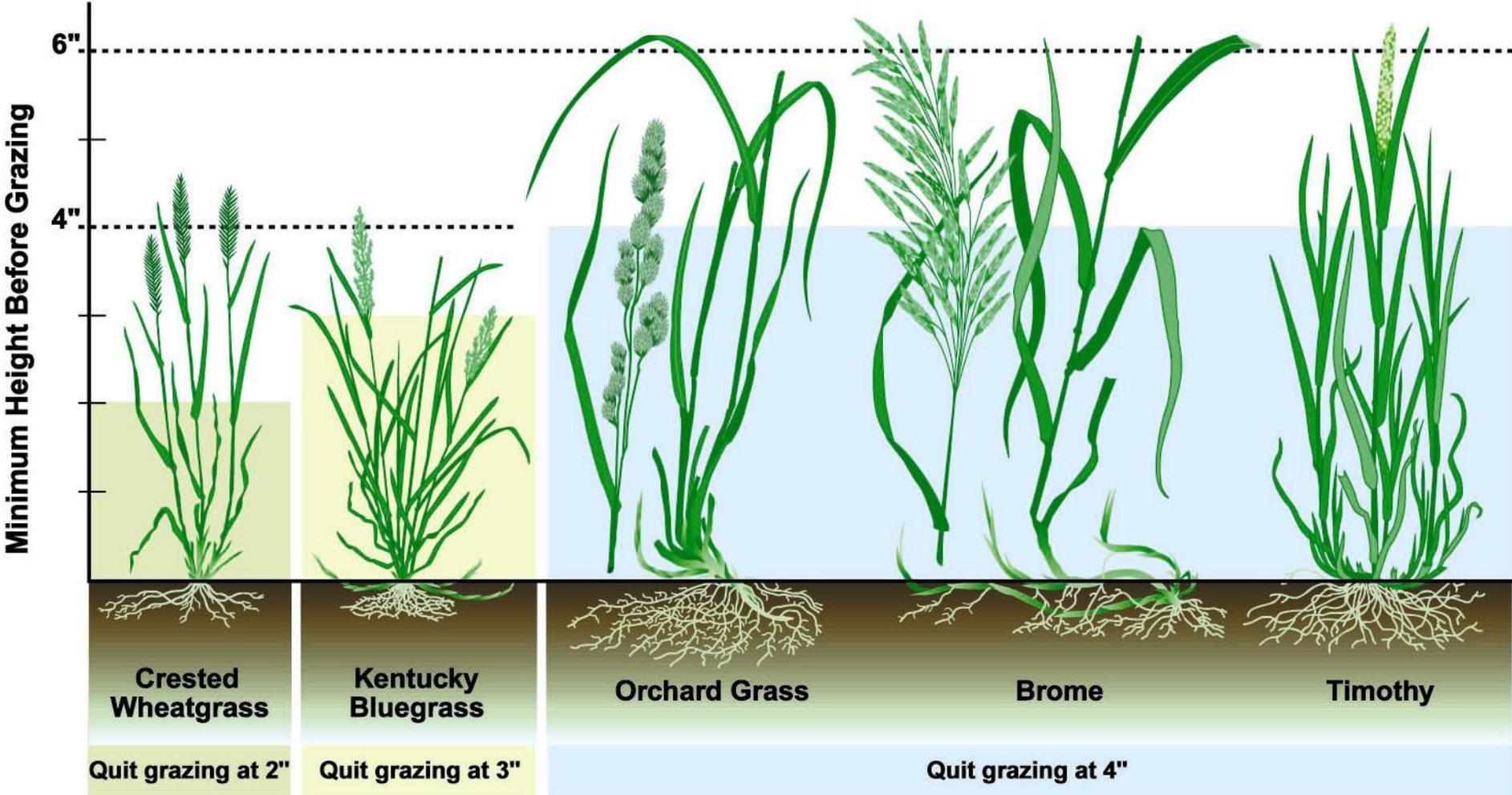


# What crop are you managing?

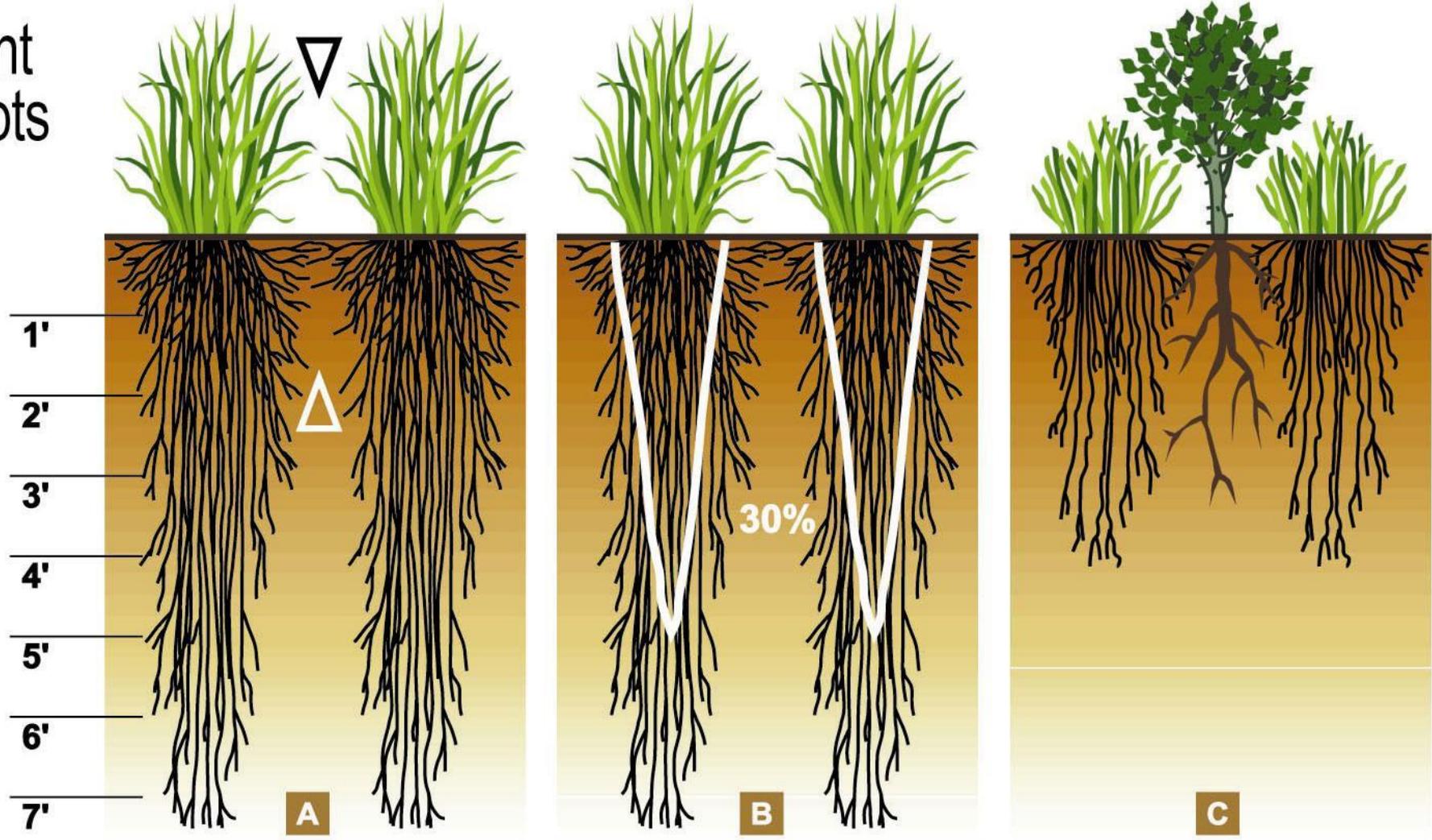
- Your forage plants, of course!



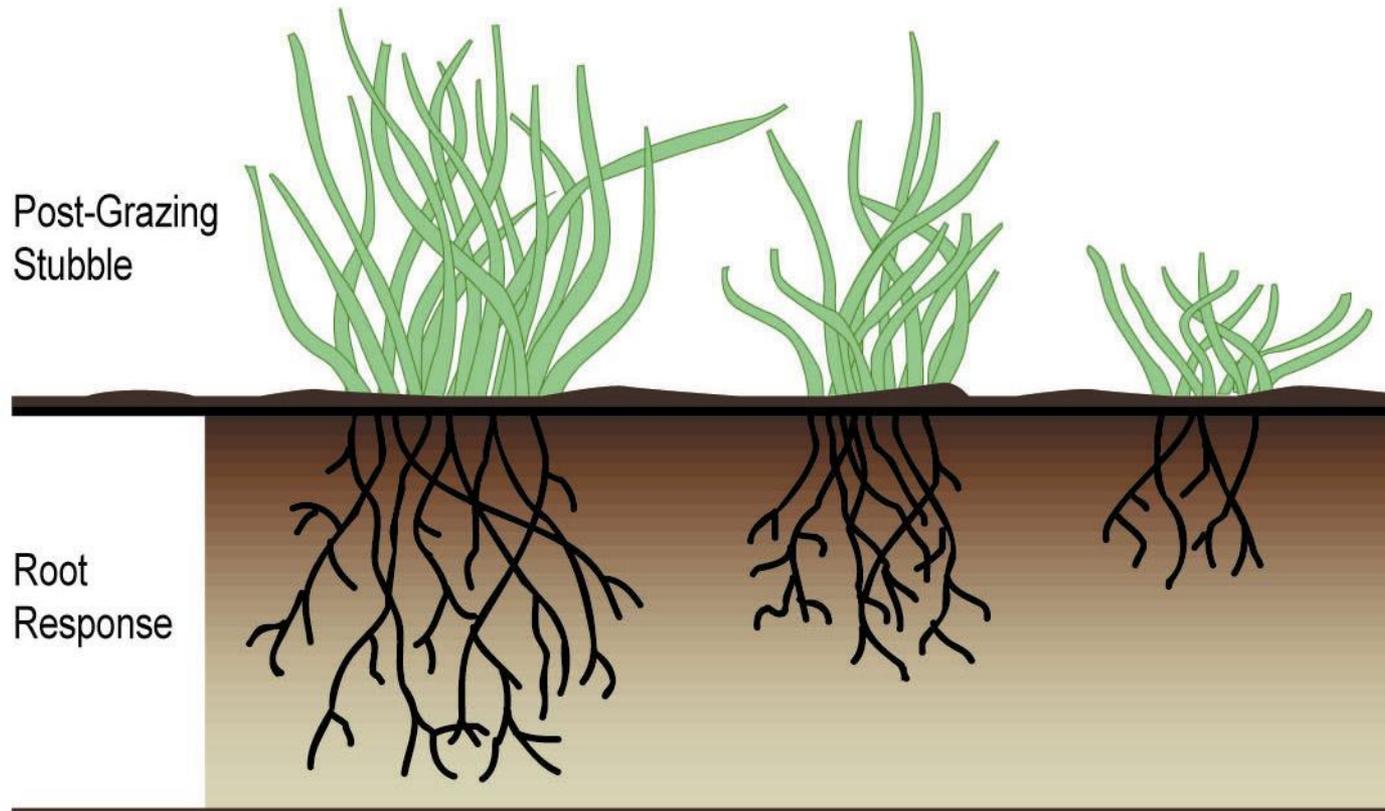
# Consider the Species



# Plant Roots



# Stubble/Pasture Health



Grazing Period	Short	Long	Continuous
Recovery Allowed	Long	Short	None



# Steps to effective grazing management

- Graze to the desired stubble height (take half, leave half)
- Allow adequate rest periods for grass regrowth
- Don't regraze a pasture until your key species has reached the desired height

# No matter how many animals... some things are the same

*You need to know:*

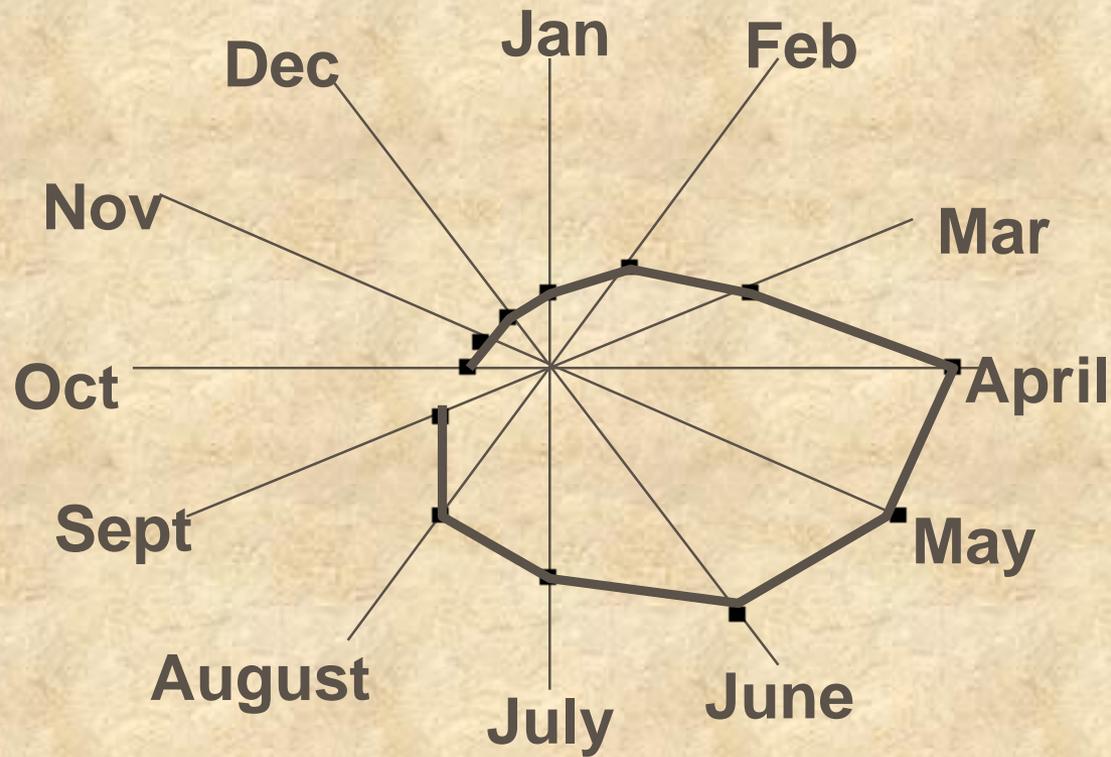
- **CARRYING CAPACITY**, or the number of animals a pasture can accommodate without overgrazing
- **STOCKING RATE**, or the amount of forage stock are going to eat



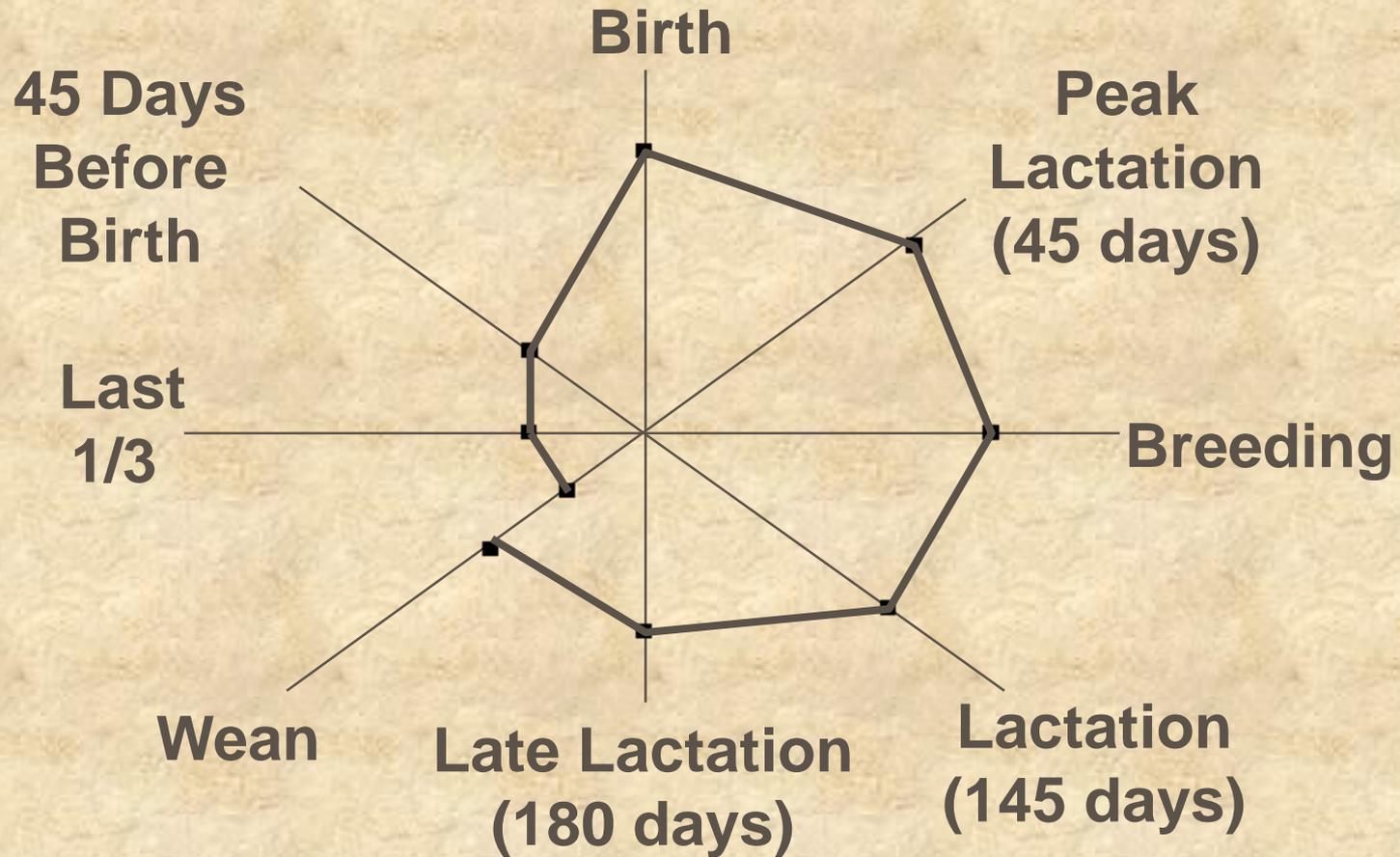
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We can predict when grass will grow, but not necessarily how much



# What do animals need & when?



***Do the nutritional needs of the animal match up with forage availability?***

# How much forage?

- Several methods can be used to estimate carrying capacity:
  - Animal Days Per Acre
  - Animal Unit Months
  - Others



# ADA: Animal Days Per Acre

- A formula for determining how many animals can graze a specific pasture for a given period of time

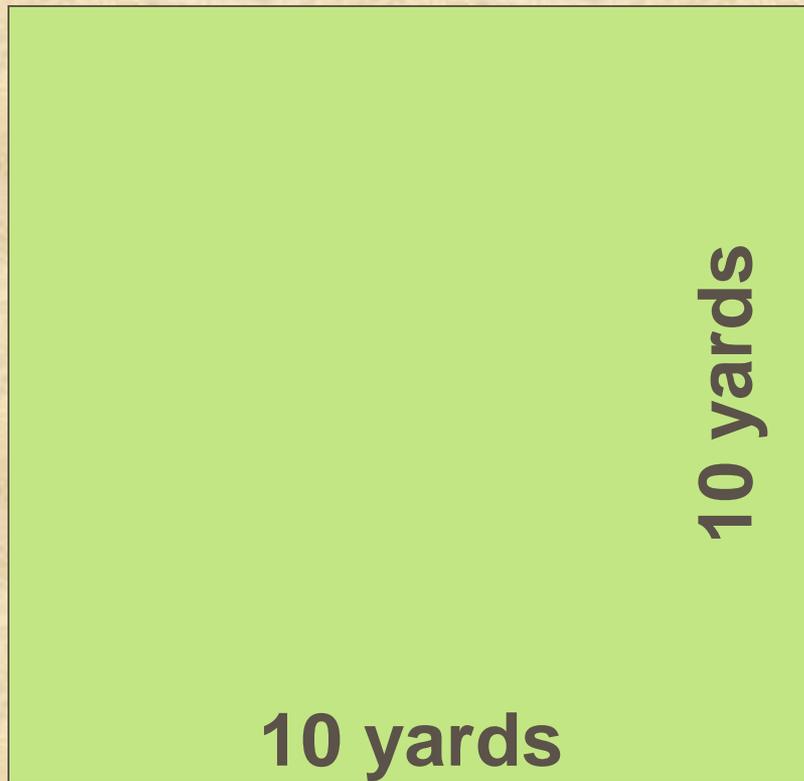




# Some ways to use ADA:

- To assess pasture quality
- To determine if a pasture can supply enough forage for a future planned grazing period
- To determine the area required to supply daily forage requirements for one animal
- To set stocking rates

# Estimating carrying capacity in ADA



Pace off an area of pasture that one animal would need for grazing for one day



# Calculate stock days per acre

- Multiply the length x the width
- Calculate square yards per acre needed per animal per day
- Divide 4840 square yards per acre by square yards needed per animal per day
- This gives Stock Days per Acre (SDA)

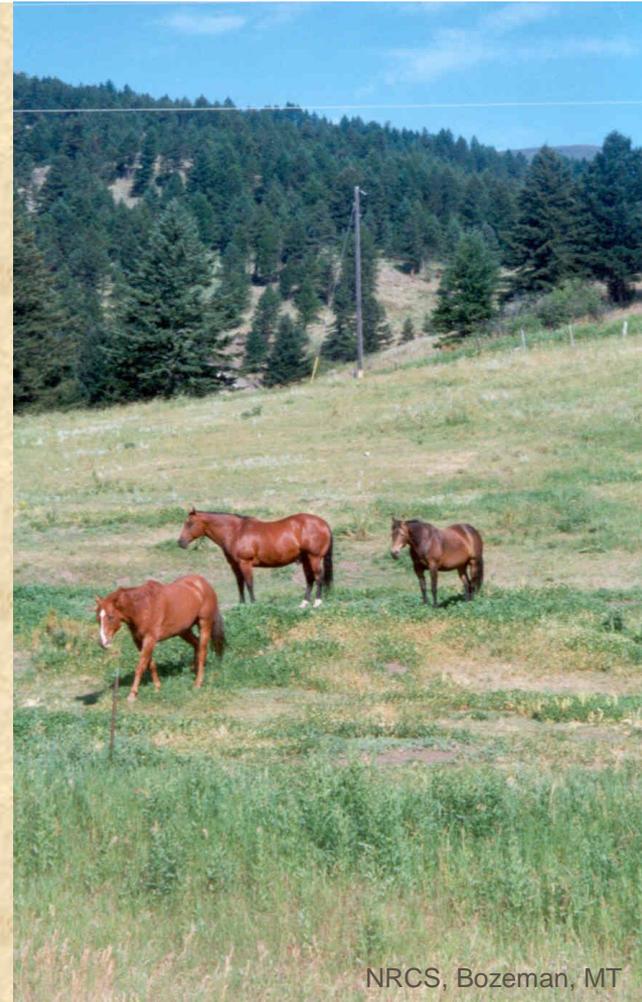
# Stock days per pasture

- Multiply SDA by the number of acres in the pasture
- The total represents the total number of stocking days in the pasture



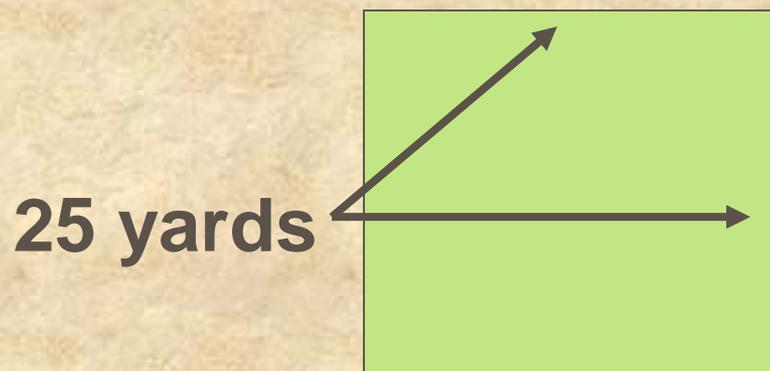
# How many days can you allow livestock to graze?

- Divide stock days by the number of horses (or other livestock)
- This tells you how many days you can graze the pasture with that number of animals



# Let's try an example

- You have five acres of pasture and four horses
- Your experimental time period is one day
- Area width and length are both 25 yards





# Step 1: Calculate stock days per acre

- Calculate the area by multiplying length x width:  
 **$25 \text{ yards} \times 25 \text{ yards} = 625 \text{ square yards}$**
- Divide 4840 square yards per acre by 625 square yards per animal day  
 $4840 \text{ square yards} / 625 \text{ square yards} =$   
**7.7 stock days per acre (SDA)**



## Step 2: Calculate total stock days per pasture

- Multiply the stock days per acre times the total number of acres in the pasture

**7.7 SDA x 5 acres = 38 stock days**

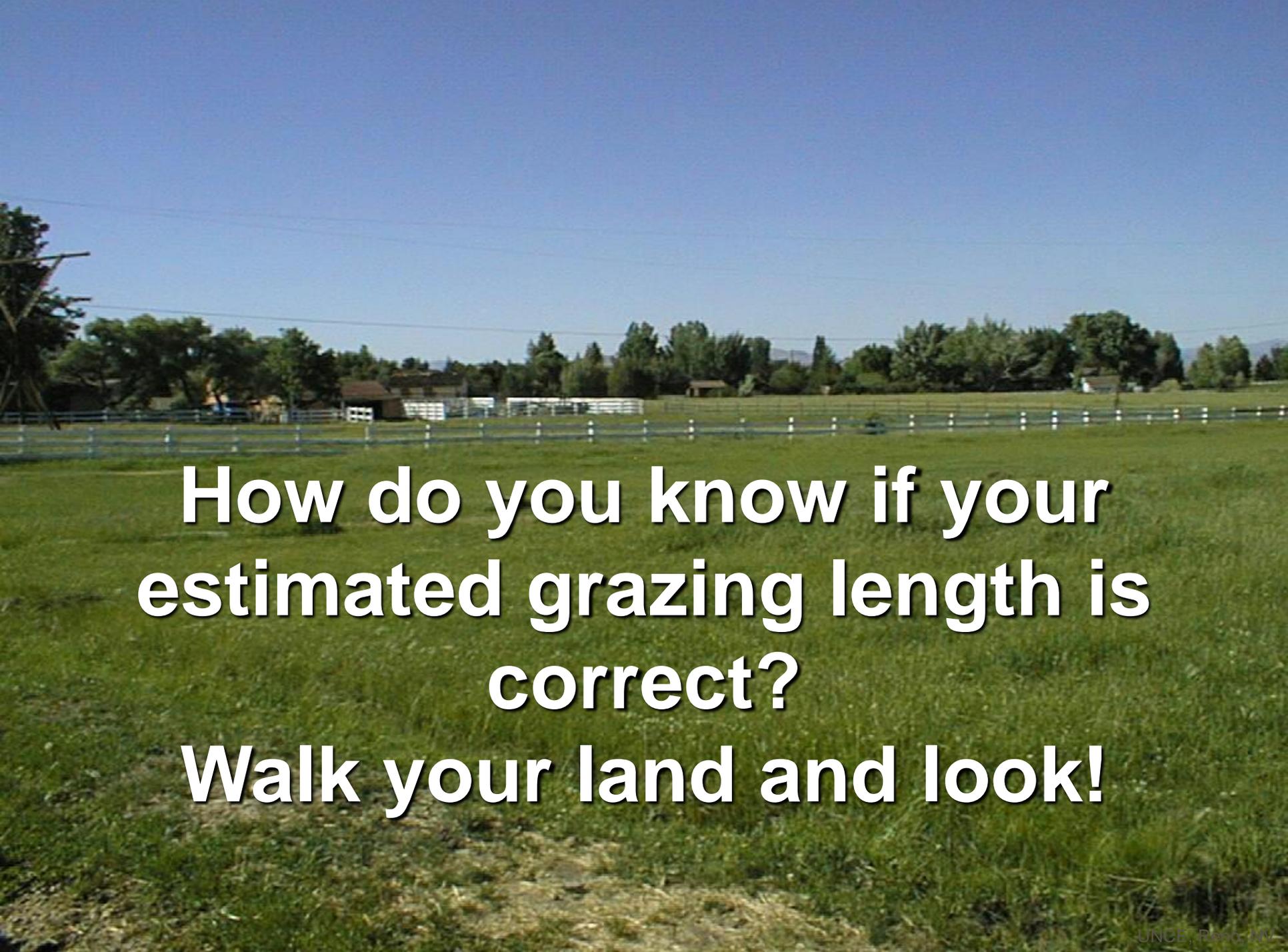


## Step 3: Calculate the number of grazing days for the pasture

- Divide the number of stock days by the number of horses

$$38 \text{ SD} / 4 \text{ horses} = 9.6 \text{ days}$$

You can graze the five acre pasture with four horses for 9.6 days

A wide-angle photograph of a lush green field, likely a pasture, with a white fence running across the middle ground. In the background, there are trees and some farm buildings under a clear blue sky. The text is overlaid on the lower half of the image.

**How do you know if your  
estimated grazing length is  
correct?**

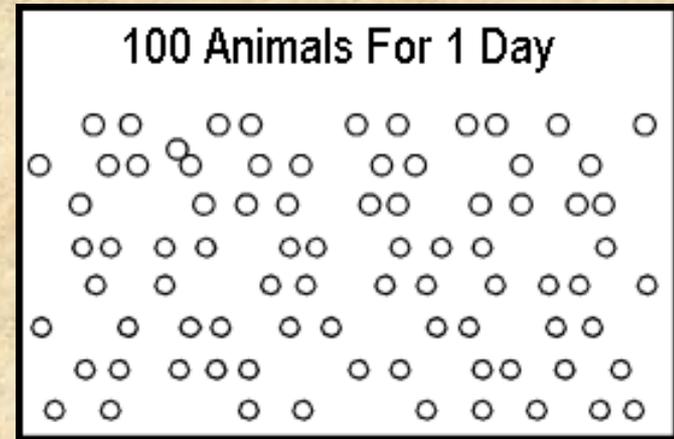
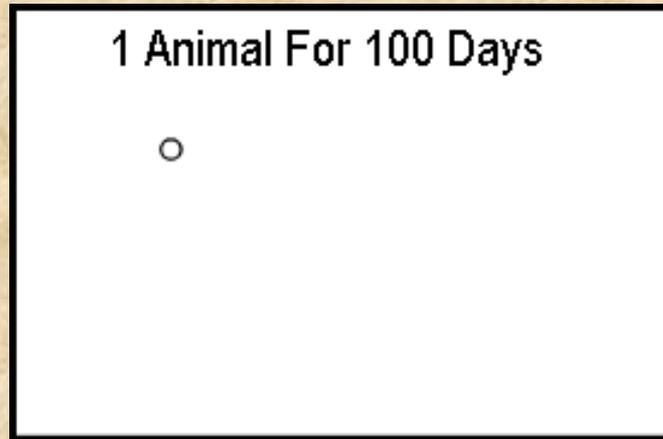
**Walk your land and look!**

# 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.



# **AUM – Animal Unit Month**

- **Animal Unit - forage consumption of one 1000-pound animal (cow)**
- **Animal Unit Month - amount of forage required for one animal unit for one month (AUM)**
- **All other animals are compared to one 1000-pound animal (cow)**

# AUM equivalents

<b>Species</b>	<b>AUM</b>	<b>Species</b>	<b>AUM</b>
<b>Cow</b>	<b>1.00</b>	<b>Sheep</b>	<b>0.20</b>
<b>Bull</b>	<b>1.30</b>	<b>Goat</b>	<b>0.20</b>
<b>Weaned Calf</b>	<b>0.50</b>	<b>Llama</b>	<b>0.30</b>
<b>Mature Horse</b>	<b>1.25</b>	<b>Deer</b>	<b>0.20</b>
<b>Yearling Horse</b>	<b>0.75</b>	<b>Elk</b>	<b>0.50</b>



# 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.

# Annual Hay Production

Is your land irrigated? ↓	Feed = hay (tons per acre) provided for an animal		
	FIELD CONDITION		
	Poor	Fair	Good
YES	<2	2 to 3	3 to 6
NO	<0.75	.75 to 1.5	1.5 to 2

# Annual Pasture Production

Is your land irrigated? ↓	Forage (AUMs/acre) = what an animal consumes by grazing.		
	FIELD CONDITION		
	Poor	Fair	Good
YES	<4	4 to 7	7 to 9
NO	<1	1 to 2	2 to 3



# Annual production of feed

- Acres of hay
- Tons of hay per acre
- Total hay production

$$\underline{\hspace{2cm}} \text{ acres X } \underline{\hspace{2cm}} \text{ Tons/acre}$$
$$= \underline{\hspace{2cm}} \text{ Tons}$$



# Annual production of forage

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

\_\_\_\_\_ acres X \_\_\_\_\_ AUMs/acre

= \_\_\_\_\_ AUMs

# Animal Requirements - Feed

Animal	Tons per animal per month	Number of animals	Number of months	Total tons of hay or feed required
Cow	0.40	X _____	X _____	= _____
Horse	0.50	X _____	X _____	= _____
Sheep	0.10	X _____	X _____	= _____
Llama	0.15	X _____	X _____	= _____
Goat	0.10	X _____	X _____	= _____
	<b>Total Feed Required</b> _____			

# Animal Requirements - Forage

Animal	AUMs per animal per month	Number of animals	Number of months	Total AUMs required
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 _____	= _____
	<b>Total Forage Required _____</b>			



# Try an example:

- A landowner has 10 acres
- 5 acres are used for hay production (FEED)
- Hay production acres are irrigated
- 5 acres are used to graze two horses (FORAGE)
- Grazed acres are not irrigated
- Landowner considers all his land to be in good condition

***Does the feed and forage balance?***



# Step 1: Calculate land production

- **FEED:** Assume that a pasture is in good condition and irrigated, so 2 tons of hay are produced. The landowner has 5 acres, so  $5 \text{ acres} \times 2 \text{ tons} = 10 \text{ tons}$  of hay per year.
- **FORAGE:** Assume the remaining 5 acres is in good condition but is not irrigated, so the pasture produces 2 AUMs.  $5 \text{ acres} \times 2 \text{ AUMs} = 10 \text{ AUMs}$  per year.



## Step 2: Calculate animal requirements

- **FEED** - A horse will eat 0.5 ton per month. The landowner has 2 horses that are usually fed hay for 5 months, so  $0.5 \times 2 \text{ horses} \times 5 \text{ months} = 10 \text{ tons}$  needed to feed the horses.
- **FORAGE** -  $1.25 \text{ AUMs} \times 2 \text{ horses} \times 7 \text{ months of grazing} = 17.5 \text{ AUMs}$  needed for the other 7 months of the year.



## **Step 3: Add it all up**

**Feed Production = 10 tons of hay**

**Feed Requirements = 10 tons of hay**

**Feed balances – just barely!**

**Forage Production = 10 AUMs**

**Forage Requirements = 17.5 AUMs**

**Forage does not balance – there is a  
shortfall in production**

# 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



# Monitoring grass height



# Make footprints to manage well

- Get out on the ground & look at what is happening
- Your footprints and observations of how pastures and stock look are critical to making the necessary adjustments



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# Three important questions

- Look **BEHIND**: What rest period do my pastures need?
- Look **AHEAD**: Has the paddock had enough rest?
- Look **WHERE** the **STOCK ARE**: Is the stocking rate correct?



# Look BEHIND:



Before making decisions about grazing periods, know how much rest is needed:

- Make footprints in pastures that stock have already grazed to evaluate regrowth
- If grass has grown a couple of inches in 1 to 2 weeks, plan relatively short rest periods (30-45 days)
- If not much regrowth has occurred in 1 to 2 weeks, plan for longer rest (60-120 days)

# Look AHEAD:

Has the pasture had enough rest?

- Make footprints in the pasture. Make sure it is ready!
- If the production is low, don't graze it yet
- If you graze the pasture before it's ready, stock will find less and less grass waiting for them each move



# Look WHERE THE STOCK ARE:

Is the stocking rate correct?

- Make footprints in the paddock currently being grazed to observe severity of use
- If use is too severe (not enough stubble height), the pasture is overstocked
- Either reduce stocking level OR lengthen the rest period





# Create more pastures



NRCS, Bozeman, MT

**To maintain sufficient rest periods, subdivide existing pastures**

- If there are 8 pastures that need 50 days of rest per pasture, graze periods will be 7 days long.
- If we divide each pasture in half to make 16 pastures, we can rest each pasture 60 days with 4-day graze periods.

**Or...dry lot animals in a sacrifice area and feed them**





# Remember to make footprints



## BEHIND

To assess growth rate & determine the rest you'll need to provide

## AHEAD

To see if it is ready for livestock (Did it get enough rest?)

## WHERE THE LIVESTOCK ARE

To see if your stocking rate is appropriate



# Grazing systems

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

# Season long grazing is not a good strategy



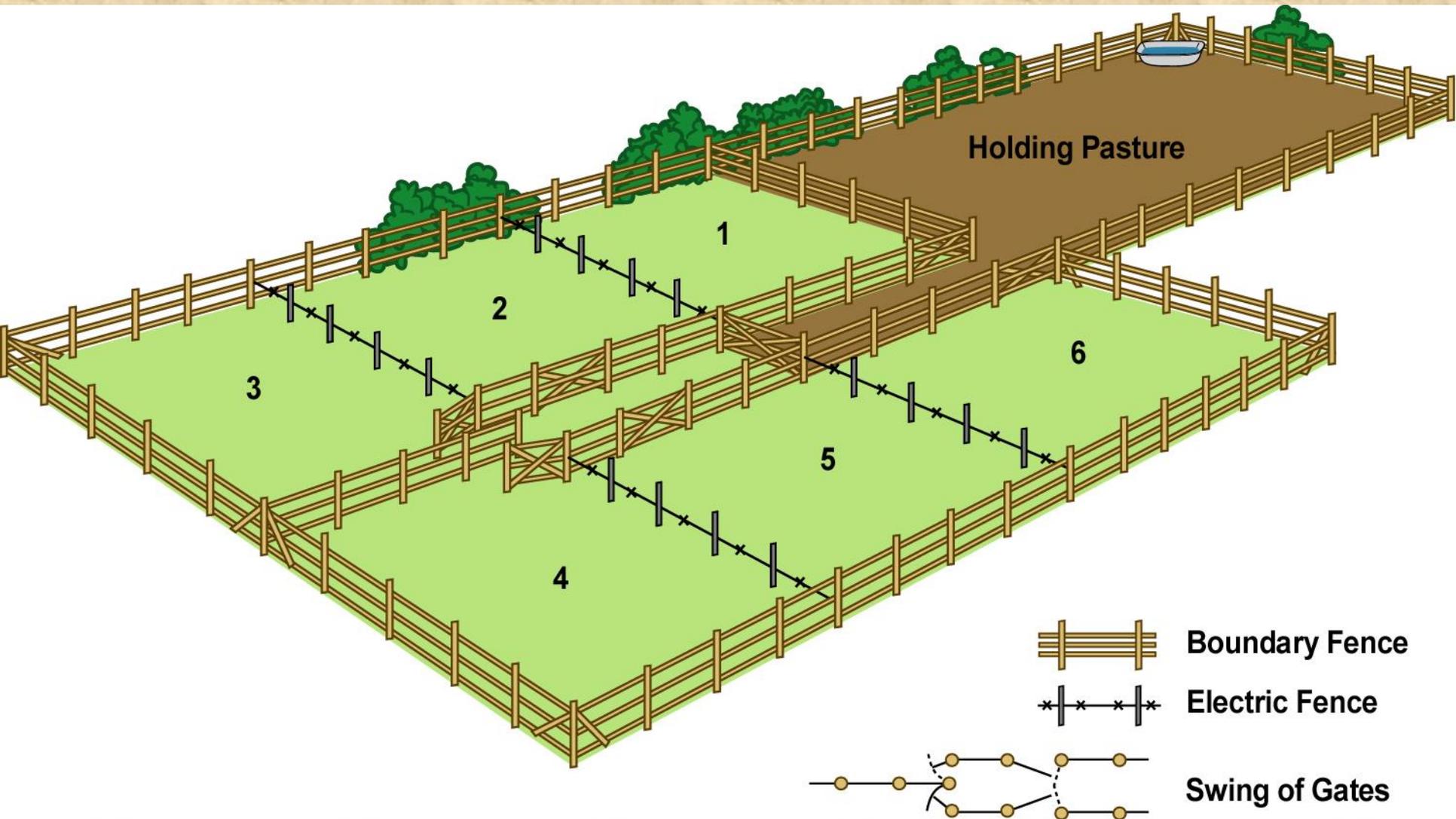
# Partial season grazing



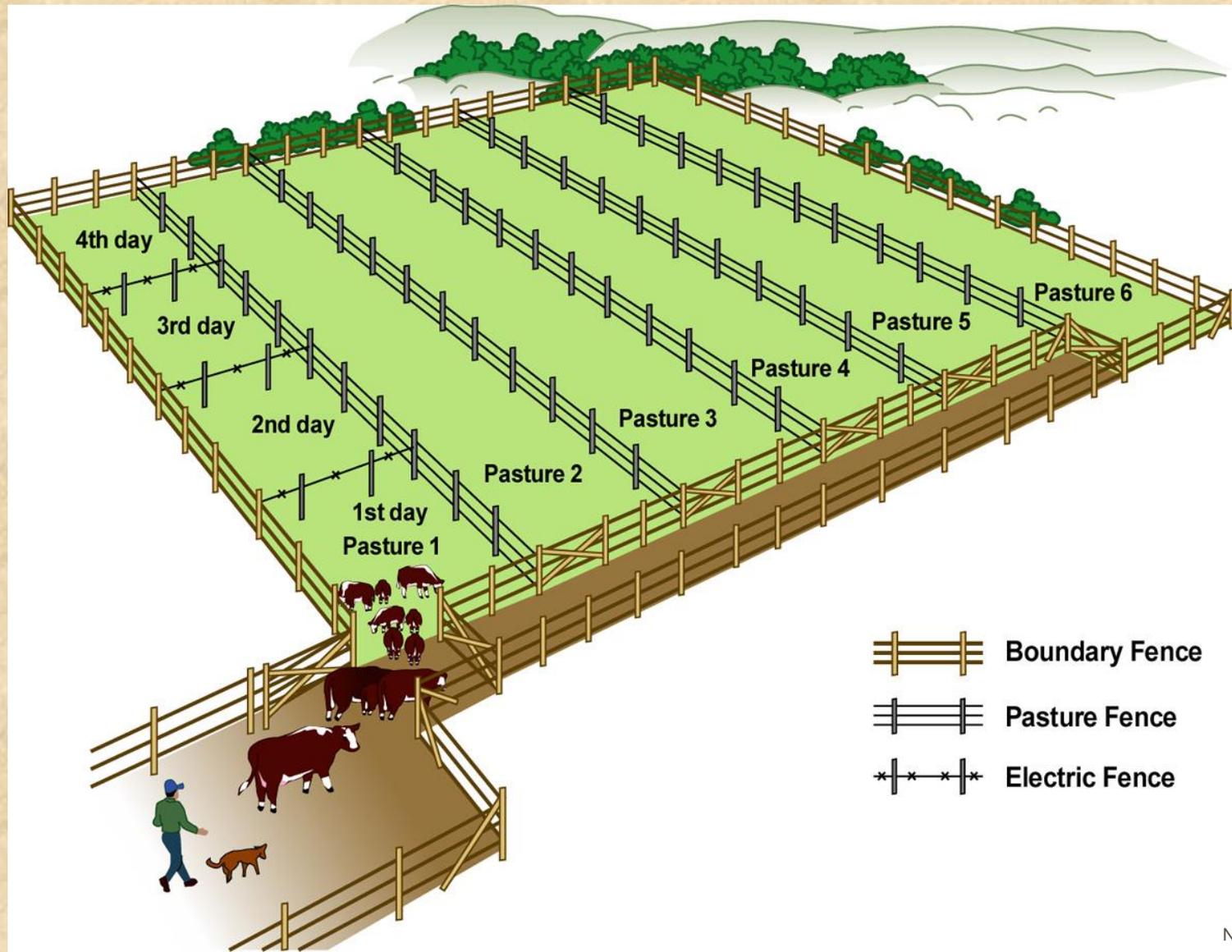
# Rotational grazing



# Rapid rotation or short duration grazing



# Cell or strip grazing



# Which grazing system is right for me?

## CONSIDER:

- Existing facilities
- Water
- Fencing



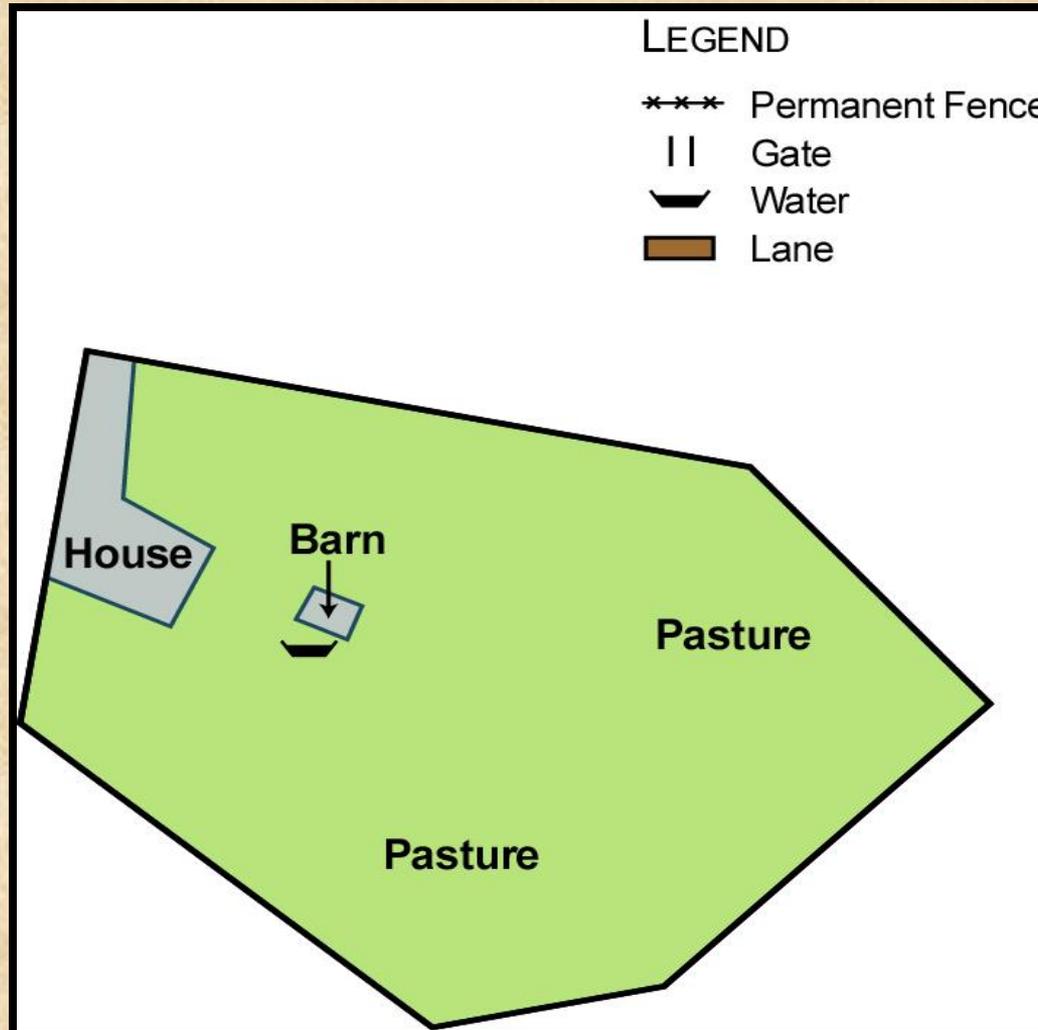
# Which grazing system is right for me?

## CONSIDERATIONS:

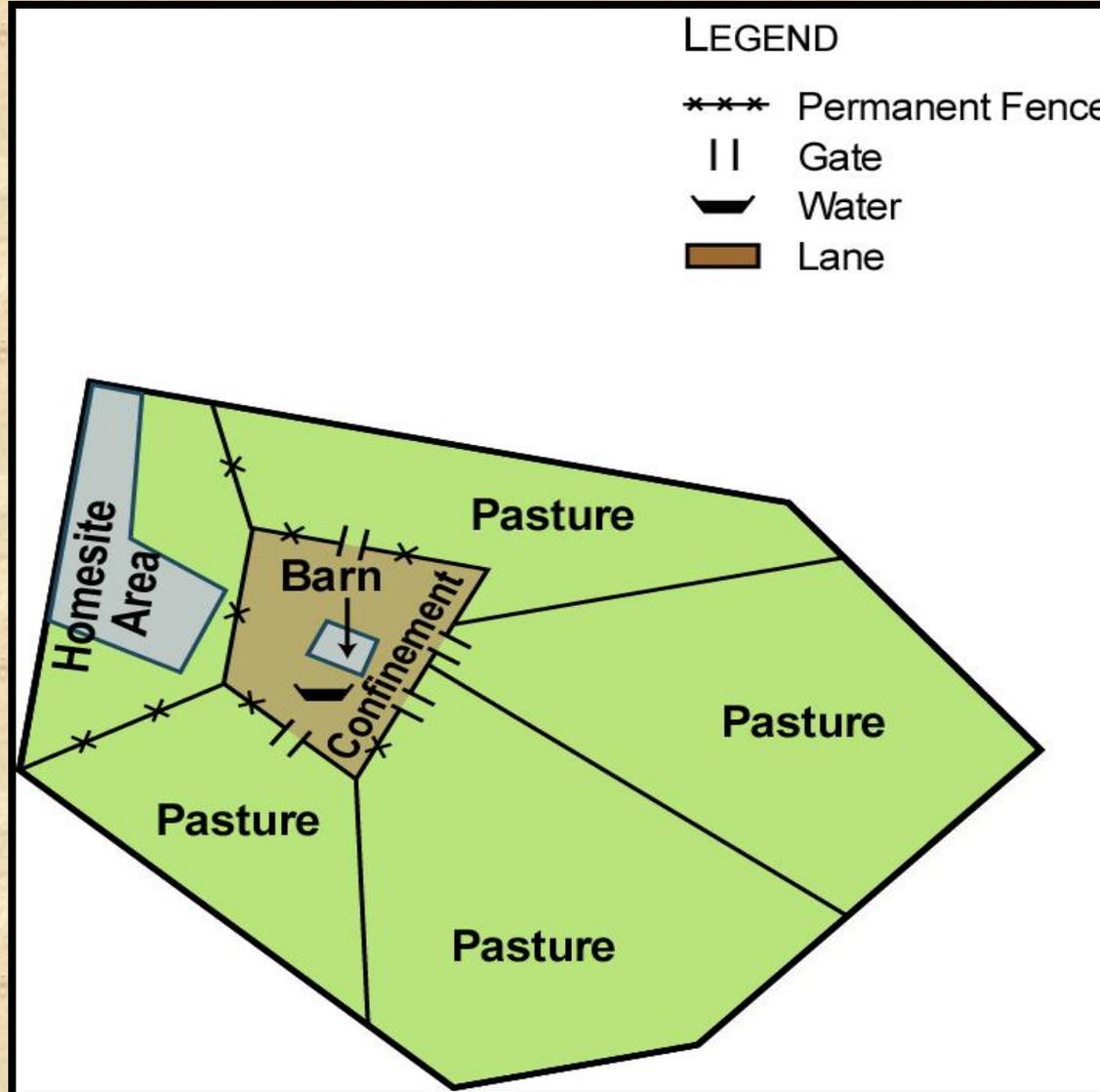
- Quality of pasture forage
- Species of grazing animal
- Costs
- Time – yours!



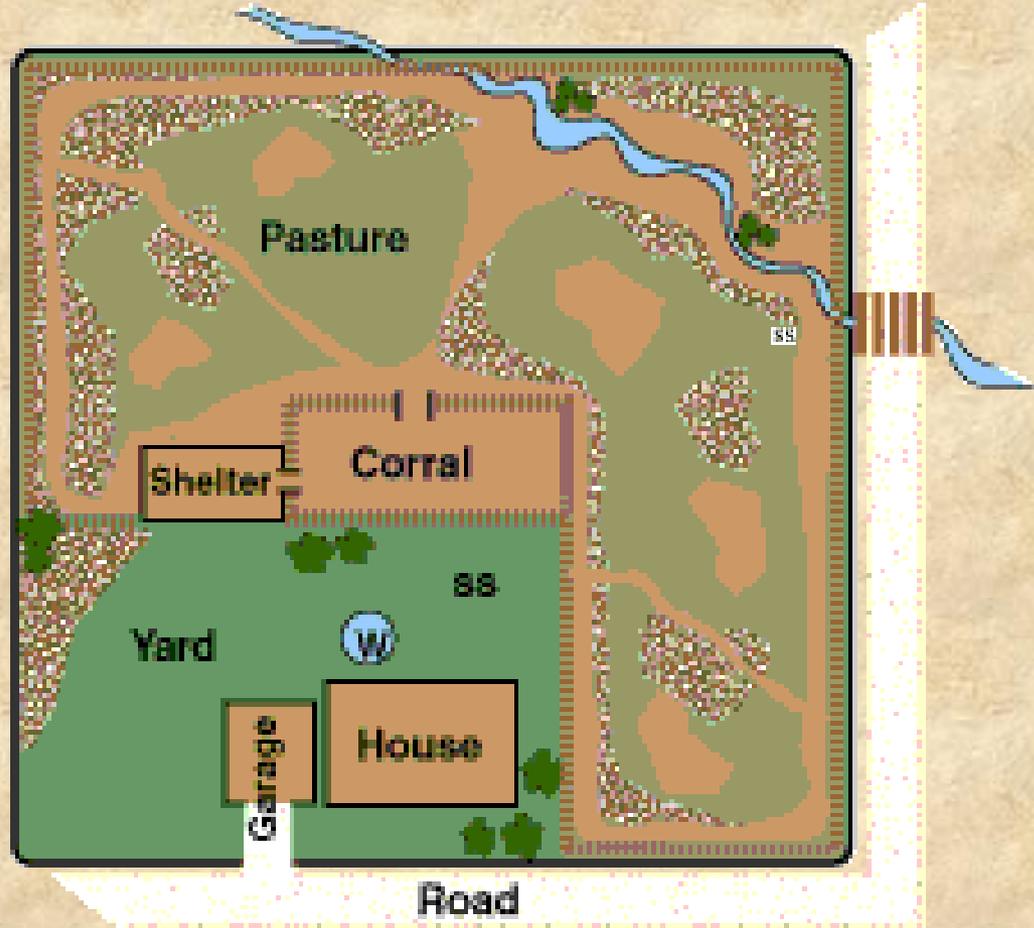
# Radial pasture configuration - before



# Radial pasture configuration – after



# Another pasture configuration - before



## Explanation

-  Bare
-  Buildings
-  Fences
-  Lawn
-  Property
-  Streams
-  Trees
-  Water
-  Weeds

# Another pasture configuration - after



## Explanation

-  Bare
-  Buildings
-  Fences
-  Lawn
-  Property
-  Streams
-  Trees
-  Water
-  Weeds



# Grazing schedules

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



# Keep records

## Record:

- 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



# Tips for improving your grazing management

- Do not allow 24/7 access to forage areas; two to three hours during morning and evening will suffice
- Divide or subdivide grazing areas into smaller blocks, where feasible
- Improve waste management so that forage is not lost or damaged by wastes



# Living on the Land

- **Set reasonable goals**
- **Plan, monitor and modify plans to meet your objectives**
- **Be observant – walk your property and make footprints**
- **Keep records – written and photographic**

# Enjoy...Living on the Land

