

Pasture Management and Length of Stay

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Goals of This Presentation

- Plant Growth Curves
- Grasses VS Broadleaves
- Understand How Plants Grow



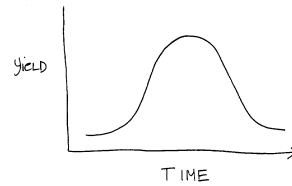
Plant Growth Curves

- Cool Season Plant Growth Curve



Plant Growth Curves

- Warm Season Plant Growth Curve



Grasses

- C3 Versus C4 grasses
 - Differences in how they use C in photosynthesis
- C4 are more efficient.
 - Can survive in hot, dry locations
 - i.e. Switchgrass, Corn



Grasses

- Bottom Line:
 - C3-store C (sugars/carbohydrates/food) in leaves
 - C4-store C in stems

Broadleaves

- Legumes
 - Take N from the air, put in ground
 - Live symbiotically with *Rhizobium* bacteria
 - Store C in stolon, crowns, etc.
- Other broadleaves
 - Chickory
 - Weeds



Growing Points

- Top bud is the area of plant re-growth
- If removed, regrowth by side buds differs by plant specie
 - Timothy, brome: GP on stem
 - OG: GP at soil level
 - White clover: GP in stolons, grows prostrate on the ground

Leaves and Food Storage Sites: “The Factory and the Warehouse”

- The Factory: Site of photosynthesis
 - Requires SUN
 - Want lots of leaves
 - Length of leaves!
- The “Warehouse”: Plant food reserves
 - Determine rate of regrowth



Grass Farmers are Sunlight Managers!

- Goal is to have 95% capture of sunlight by leaves
- Over-grazing
 - No leaves
 - Declining food reserves for plants
 - Weeds dominate
- Under-grazing
 - Shading lower leaves of plants
 - Lower leaves die off
 - i.e. White clover declines die to lack of light
- Topography
 - Northern VS Southern exposures
- Pasture density is key to animal intake



Space Competition and Roots

- Greater the root mass, greater plant nutrition
- Adequate fertility
- Heat/drought will restrict leaf area, plant size. etc.
- Compaction

Length of Stay

- No longer than 3 days
- Rest: 15-21 days between rotations
- Greater than 3 days, will cause:
 - loss of stored food reserves, thus reducing yield
 - reduced intake due to smaller bites
 - reduced forage quality (lower part of plant)

Sizing Your Paddocks

- ❑ Days per paddock
- ❑ Number of Animals
- ❑ Animal Weight
- ❑ % Body Weight Intake
- ❑ Forage production (pounds per inch/acre)
- ❑ Inches of available forage
- ❑ % Utilization

% BW Dry Matter Intake

Beef Animals	2.5%
Milking Dairy- Grass-fed	3.0%
Milking Dairy- TMR/Grain	2.0%
Dry Cows	1.9%
Dairy Heifers	2.3%
Horses	2.0%
Goats/Sheep	4-5% lact. 2% maint.
Llamas/Alpacas	2.0%

Forage Production (lbs/in)

Grass	Poor Stand	Fair Stand	Good Stand
OG + Clover	200	300	350
BG + Clover	200	300	400
TF + Clover	200	300	400
SW + Nitrogen	100	150	200

Grazing Days vs. % Utilization

Days	Max. % Utilization
1 or less	80%
2	75%
3	75%
4	70%
5	65%
6 or more	60%

Paddock Sizing

Number of Acres=

$$\frac{\text{Days X Animal Number X Weight X \% BW Intake}}{\text{Lbs Forage/in X Available Inches X \% Utilization}}$$

Farm Situation

- ❑ 50 Cow/Calf Pairs
- ❑ 3 day rotation
- ❑ 1400 lbs average weight
- ❑ 2.5% BW Intake
- ❑ Fair Stand OG + CL = 300 lbs/in/acre
- ❑ 4 inches available forage
- ❑ 75% Utilization

Paddock Size

Number of Acres =

$$\frac{3 \text{ days} \times 50 \text{ Cows} \times 1400 \text{ lbs} \times 2.5\% \text{ BW}}{300 \text{ lbs} \times 4 \text{ inches} \times 75\% \text{ Utilization}}$$

Paddock Size

Number of Acres = 5.83 rounded to 6

$$\frac{3 \text{ days} \times 50 \text{ Cows} \times 1400 \text{ lbs} \times 2.5\% \text{ BW}}{300 \text{ lbs} \times 4 \text{ inches} \times 75\% \text{ Utilization}}$$

Number of Days

Number of Days =

$$\frac{\text{Acres} \times \text{Lbs Forage/in} \times \text{Available Inches} \times \% \text{ Utilization}}{\text{Animal Numbers} \times \text{Animal Weight} \times \% \text{ BW Intake}}$$

Number of Days

Number of Days = 6.17 rounded to 6

$$\frac{15 \text{ ac} \times 300 \text{ Lbs/In} \times 4 \text{ inches} \times 60\% \text{ Utilization}}{50 \text{ Cows} \times 1400 \text{ Lbs} \times 2.5\% \text{ BW Intake}}$$

Number of Paddocks

- Based on Rest Period (each rotation)
 - 14 – 20 days during Spring
 - 40 days during Summer
 - 30 days during Fall

Numbers of Paddocks

Number of Paddocks =

$$\frac{\text{Days Rest Required}}{\text{Days per Paddock}} + 1$$

Numbers of Paddocks

Number of Paddocks = 14 Summer
8 Spring

$\frac{40 \text{ Days Rest}}{3 \text{ Days per Paddock}} +1$

$\frac{20 \text{ Days Rest}}{3 \text{ Days per paddock}} +1$

Total Acres Required

Total Acres Required =

Acres Per Paddock X Number of Paddocks

Total Acres Required

Total Acres Required = 42 Acres Summer
24 Acres Spring

3 Acres Per Paddock X 14 Paddocks

3 Acres Per Paddock X 8 Paddocks

Thank you!

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