Beef Grazier's Arithmetic

Step 1: Calculate the amount of forage supplied by pasture

- With a yardstick, measure the average height of the forage prior to turning cattle into the pasture.
- Multiply the height in inches by the estimated dry matter yield in pounds per acre-inch for the type of pasture you have. These numbers come from the table shown.

Pasture Species	Stand Condition		
	Fair	Good	Excellent
	----- lbs/acre-inch -----		
Tall Fescue	250-350	350-450	450-550
Tall Fescue + Legumes	200-300	300-400	400-500
Smooth Bromegrass + Legumes	150-250	250-350	350-450
Orchardgrass + Legumes	100-200	200-300	300-400
Bluegrass + White Clover	150-250	300-400	450-550
Mixed Pasture	150-250	250-350	350-450

Step 2: Determine the daily forage intake needed for your cows or calves.

- Multiply the average weight of the cows or stockers that will be grazing by the forage intake weight in percent of body weight. Figure 2% for dry cows, 3-4% for lactating cows and 2.5-3.5% for stocker calves.

Step 3: Determine the grazing efficiency during the entire grazing season for your rotational grazing system.

Whole Season Grazing Efficiency	
Continuous	30%
4 Pasture	35%
8 Pasture	50%
12 Pasture	65%
24+ Pasture	75%

Step 4: Use these formulas to determine the number of days cows or calves can be placed in a pasture or the stocking density of a pasture.

$$\text{Days} = \frac{\text{Total lbs Forage/Ac X Acres X \% Grazing Efficiency}}{\text{Animal Forage Intake Rate in lbs X Animal \#}}$$

$$\text{Animal \#} = \frac{\text{Total lbs Forage/Ac X Acres X \% Grazing Efficiency}}{\text{Animal Forage Intake Rate in lbs X Days on Paddock}}$$

EXAMPLE

8-acre pasture; 50-cow herd

Step 1: Good fescue / clover stand that is 8" tall

350 lb/acre-inch X 8" = 2800 lbs standing forage available

Step 2: 1000 lb average lactating cows.

1000 lb X 4% = 40 lbs daily intake

Step 3: 8-pasture rotational system = 50% efficiency

Step 4:

$$\frac{2800 \text{ lbs X } 8 \text{ acres X } .50}{40 \text{ lbs X } 50 \text{ cows}}$$ = **Graze the herd for only 5 days on this pasture**

$$\frac{2800 \text{ lbs X } 8 \text{ acres X } .50}{40 \text{ lbs X } 10 \text{ days}}$$ = **If you want to graze this field for 10 days, only 28 cows should be placed on this pasture**

Tim Schnakenberg
Agronomy Specialist
University of Missouri
Stone County Extension Center
Galena
417-357-6812