

Determining Forage Demand and Animal Intake

This guide illustrates how to determine the acreage needed to meet the forage demand of grazing animals for a defined period of time.

Step 1: Determine animal intake requirements

This is determined by estimating what percent of an animal's body weight it will consume in dry matter in one day. The percentage will vary according to the class of livestock being fed, forage quantity, and nutritive value. The following provides an estimate for different classes of livestock:

Animal Class	Forage consumption, % of body weight
Beef cow (dry)	2.0-2.5%
Beef cow with calf	2.4-2.6%
Heifer, replacement	2.5-3.0%
Stocker	2.5-3.5%

†Adapted from NRC (1996); Alabama NRCS Grazing Stick

Step 2: Determine the efficiency of the grazing system

The efficiency of the grazing system provides an estimate of forage utilization. A range of 40 to 70% pasture utilization is common. Below is an estimate of forage utilization for various grazing methods:

Grazing method†	Efficiency
Continuous stocking	30-40%
Slow rotation (3-4 paddocks)	50-60%
Moderate rotation (6-8 paddocks)	60-70%
Strip grazing	70-80%

†Adapted from Ball et al. (2007)

Step 3: Putting it all together

Calculate the area required per paddock to provide adequate forage intake for a defined number of days.

$$\text{Acres required per paddock} = \frac{\text{Avg. weight of animals to be grazed} \times \text{Dry matter intake, \% of animal body weight} \times \text{Number of animals} \times \text{Days on pasture}}{\text{Available forage mass}^\ddagger \times \% \text{ Forage utilization}^\dagger}$$

*Adapted from IPNI: Forage Crop Pocket Guide (2012)

Where:

[‡]Available forage mass is the amount of dry matter available in the area to be grazed. (See [Using a Grazing Stick for Pasture Evaluation](#)).

[†]% Forage utilization (See Step 2 above).

Example:

Twenty 1,200 pound (lb) dry, pregnant brood cows
 1,200 lb x 2.5% body weight in dry matter intake = 30 lb dry matter needed per day
 Days on pasture before rotating = 7 days
 Slow rotation, 50% grazing efficiency
 Available forage mass = 2,000 lb of dry matter per acre

$$\begin{aligned} \text{Acres required per paddock} &= \frac{1,200 \text{ lb} \times 2.5\% \times 20 \text{ animals} \times 7 \text{ days}}{2,000 \text{ lb dry matter per acre} \times 50\% \text{ utilization}} \\ &= 4.2 \text{ acres required for 7 days} \end{aligned}$$

Now determine the total acres needed based on the number of paddocks in your system:

Total Acres Required = Number of Paddocks x Acres Required Per Paddock
 = 4 paddocks x 4.2 acres
 = 16.8 acres

Stocking rate = $\frac{\text{Number of animals grazing}}{\text{Total acres grazed}}$ = $\frac{20 \text{ animals}}{16.8 \text{ acres}}$ = 1.2 animals per acre

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