



# Determining the Grazing Capacity of Your Pasture

Lori K. Warren, PhD, Institute of Food and Agricultural Sciences, University of Florida

A pasture must be stocked appropriately to maintain its health and productivity. The amount of forage removed by horses during grazing must be balanced with the amount of forage available in the pasture.

## Determining how much forage is available for grazing

The average amount of forage produced on different types of pasture is shown in Table 1. While table values can be used to estimate the amount of forage growing in your pastures, a more accurate technique for determining the amount of forage available for grazing involves taking a representative sample from your pasture.

### Equipment needed:

- Hoop
- Grass clippers or scissors
- Hand-held spring scale that weighs in grams (a 300-500 gm scale works best)
- Small- to medium-sized paper bags

A hoop can be constructed by bolting the ends of an 8-ft long, 1/4" cable. This will produce a hoop with a 30-inch diameter. Hardware and home improvement stores sell cable and bolt attachments for about \$5. A 500-gram scale can be purchased from forestry, animal health or surveying companies for about \$40.



### Procedure:

**Step 1: Pre-weigh empty bags** and record the weight.

**Step 2: Select a sight to clip.** Select a site where the soil, slope and grasses are representative of the pasture as a whole.

**Step 3: Toss hoop and clip forage.** Randomly toss the hoop and let it land flat on the ground. Clip the plants lying within the hoop down to ground level. Discard all litter, roots, weeds and soil (everything but actual pasture grasses).

**Step 4: Put clippings into a pre-weighed paper bag.**

**Step 5: Let clippings air dry in the bag.** Drying may take 2 to 4 days. The clippings should look and feel like hay when they are dry.

**Step 6: Weigh the bag using the gram scale.** Subtract the weight of the bag from the weight of the clippings + bag.

**Step 7: Average weights obtained from each hoop.** To obtain a representative sample, plants should be clipped, dried and weighed from several different locations within your pasture. Average the weights (in grams) obtained from each hoop.

**Step 8: Calculate the total amount of forage growing per acre.** Multiply the average hoop weight by 20 to convert the grams of forage in an 8-ft circumference circle to pounds per acre. This measurement is the total pounds of forage per one acre of pasture.

**Step 9: Multiply total pounds of forage per acre times the number of acres in your pasture.**

**Step 10: Calculate the forage available for grazing.** Some of the forage in a pasture will be lost to trampling. And some of the forage needs to be left behind to sustain the plant. So the total amount of forage growing in your pasture will have to be adjusted to account for these losses. To determine the amount of forage available for grazing, multiply the total amount of forage by 0.35.

## Determining how much forage is grazed by horses

As a rule of thumb, a horse will eat, trample or damage approximately 3% of its body weight per day in pasture forage. Thus, the average 1000-lb horse would use 30 lbs of forage per day ( $1000 \times 0.03 = 30$ ).

The amount of forage consumed per hour can also be estimated. Horses turned out to pasture fulltime do not graze the entire 24-hr period. Instead, horses will only spend 9 to 14 hours a day grazing. Therefore, an average 1000-lb horse will likely consume 2.5 to 3.5 lbs forage (air-dry weight) per hour ( $30 \text{ lbs} \div 9 \text{ hrs} = 3.5 \text{ lbs/hr}$  and  $30 \div 14 \text{ hrs} = 2.5 \text{ lbs/hr}$ ).

## Determining your pasture's grazing capacity or length of grazing time

Once you know how much forage is available for grazing, you can calculate how many horses your pasture can support (grazing capacity) or how long your horses may be able to stay on the pasture for grazing.

Number of horses the pasture can support =

$$\frac{\left[ \begin{array}{l} \text{Amount (lbs) of forage} \\ \text{available for grazing} \end{array} \div \begin{array}{l} \text{Length of time (days)} \\ \text{horses will graze} \end{array} \right]}{30 \text{ lbs forage per horse}}$$

OR

Length of time horses can graze (days) =

$$\frac{\text{Amount (lbs) of forage available for grazing}}{\left[ \begin{array}{l} 30 \text{ lbs forage} \\ \text{per horse} \end{array} \times \begin{array}{l} \text{Number of} \\ \text{horses} \end{array} \right]}$$

To extend your grazing season (ie, add more days), you may choose to graze for a limited number of hours per day. To calculate grazing on an hourly basis, simply convert days to hours and use the estimated forage consumption per hour (ie, 2.5 to 3.5 lbs forage/hour/horse) in place of forage per day.

**Table 1: Estimated forage available (tons/acre) for grazing during spring, summer and fall**

Season	Pasture Condition		
	Poor	Fair	Good
Spring & early Summer	< 2.0	2.0 – 4.0	4.0 – 6.0
Late Summer & Fall	< 0.5	0.5 – 1.0	1.0 – 2.0

## Example Calculations

### 1. Determining Grazing Capacity

*Known:*

- Size of acreage = 10 acres
- Forage available for grazing = 1000 lbs/acre
- Length of grazing time = 90 days

*How many horses can this pasture support?*

$$\frac{(10 \text{ acres} \times 1100 \text{ lbs/acre}) \div (90 \text{ days})}{30 \text{ lbs forage/horse}} = 3 \text{ horses can graze for 90 days}$$

### 2. Determining Length of Grazing Time

*Known:*

- Size of acreage = 10 acres
- Forage available for grazing = 750 lbs/acre
- Number of horses = 5

*How long can these horses graze this pasture?*

$$\frac{(10 \text{ acres} \times 750 \text{ lbs/acre})}{(30 \text{ lbs forage/horse} \times 5 \text{ horses})} = 50 \text{ days of grazing}$$

**Limiting pasture turnout time can easily extend the number of grazing days.**

- If each horse eats 3 lbs forage/hour of grazing, and turnout is limited to 6 hrs/day, these 5 horses could graze for 83 days:

$$\frac{(10 \text{ acres} \times 750 \text{ lbs/acre})}{(5 \text{ horses} \times 3 \text{ lbs/hr} \times 3 \text{ hrs})} = 83 \text{ days}$$

- If turnout is further limited to 3 hrs/day, these 5 horses could graze for 166 days.