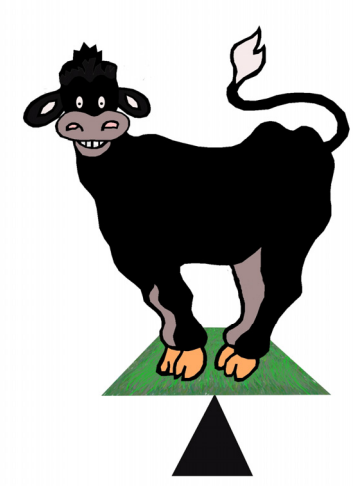
How many animals should be on your pasture?

If you have a limited amount of land but a flexible herd size, you probably want to know **the maximum number of animals** that you can graze on your pasture.



How many acres of pasture do your animals need?

If you have a lot of land but you want to keep a fixed number of livestock, you probably want to know **the minimum amount of land** your animals need to graze.

Finding the right balance between your herd size and your available forage is essential to good grazing management whether you are you are using a continuous or rotational grazing system.

To answer the questions above, you'll need to know:

- the length of your grazing season in days OR you can figure how much you will need for the whole year by using 365 days.
- the average weight of one of your animals
- the total number of acres available for grazing (many people also include their hayland)
- the average yield of your pasture per acre (Use your own yield figures if you have them. If not, you can get average yield estimates from your local NRCS Office.
- The daily utilization rate for livestock. This is always the same number, .04, or 4%. This figure is used because livestock need to have 4% of their weight in forage each day (2.5-3% intake, .5 trampling loss and .5-1% buffer).

EXAMPLE FARM

Beefy Acres is a cow/calf operation located in the Southeast.

- We are going to try to figure out how much we will need the whole year (**365 days**)
- The average weight of one beef cow/calf is **1200 lb**
- We have a total of **20** acres of pasture
- We have 10 ac of bermudagrass and ryegrass with an average yield of **11,500 lb/ac/yr**
- We have 10 ac of fescue with an average yield of **7,500 lb/ac/yr**
- Together, the average yield of both pastures is **9,500 lb/ac**

You may have heard a rule-of-thumb is that it takes 1.5 to 2 acres to feed a cow calf pair for 12 months. That means we should be able to have 10 to 13 cows.
Let's see how this rule-of-thumb holds up.

Balancing your Animals with your Forage

Let's start with how many animals should be on our example farm.

$$\text{Total Number of Animals} = \frac{(\text{total acreage } 20 \text{ ac}) \times (\text{average yield per acre } 9{,}500 \text{ lb/ac})}{(.04) \times (\text{average animal weight } 1200 \text{ lb}) \times (\text{grazing days } 365)}$$

$$\frac{(20) \times (9{,}500)}{(.04) \times (1200) \times (365)} = \frac{190{,}000}{17{,}520} = \boxed{\textbf{11 animals}}$$

This is the maximum number of animals. You can always stock less animals.

Now let's figure out the minimum amount of pasture our animals would need.
Let's use the 11 beef cows from above.

$$\text{Acres of Pasture Needed} = \frac{(\text{animals } 11) \times (\text{average animal weight } 1200 \text{ lb}) \times (.04) \times (\text{grazing days } 365)}{(\text{average yield per acre } 9{,}500 \text{ lb})}$$

$$\frac{(11) \times (1200 \text{ lb}) \times (.04) \times (365)}{(9{,}500 \text{ lb/ac})} = \frac{192{,}720}{9{,}500} = \boxed{\textbf{20 acres}}$$

This is the minimum amount of land. You can always use more than the minimum.

It looks like our rule-of-thumb held up pretty good, 11 cows on 20 acres, is 1.8 acres per cow. We have enough forage to feed our cows for the whole year. These figures give you a good estimate and are a great place to start.

Unfortunately, grass does not grow in equal amounts the entire year. So, we'll need to break this down on a month-by-month basis. To do this, you'll need to know the growth pattern and rate of your forage for your area. You can get the growth rates for your area from your local NRCS office or use your own numbers if you have them. Let's look at the example monthly growth rate of our pastures below.

Table 1: Monthly Growth Rate in lb/ac

Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
bermuda/rye 11,500/yr	62	112	1080	1140	1674	1410	2015	1798	930	589	570	120
fescue 7,500/yr	93	410	1085	1500	1178	450	155	248	540	1178	570	93

Balancing your Animals with your Forage

How much forage do our animals need each month?
We know each animal needs 4% of its weight in forage each day (daily utilization rate .04). If we multiply the daily utilization rate times 30 days, we get the monthly utilization rate which is 1.2.
To figure our how much forage our herd needs each month we multiply the monthly utilization rate (1.2) times the number of animals (11) and the average weight (1200 lb).

Amount of forage needed each month	= (1.2) x (11 animals) x (average weight 1200lb) =	15,840 lb

How much forage do we have each month?
To figure our how much forage we are producing each month, we take the monthly lb/acre produced by our pastures from Table 1, and multiply this amount by how many acres we have of each pasture. For example, looking at Table 1, we know that the bermudagrass/rye pasture produces 62lb/ac of forage in January. We multiply this by 10 acres to give us 620 lb. This is the total produced by that pasture in January, as shown in the Monthly Forage Balance Sheet below.

Beefy Acres: Monthly Forage Balance Sheet												
Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
10ac bermuda-grass/rye	620	1,120	10,800	11,400	16,740	14,100	20,150	17,980	9,300	5,890	5,700	1,200
10ac fescue	930	4,100	10,850	15,000	11,780	4,500	1,550	2,480	5,400	11,780	5,700	930
Total Amount Available	1,550	5,220	21,650	26,400	28,520	18,600	21,700	20,460	14,700	17,670	11,400	2,130
Total Amount Needed	15,840	15,840	15,840	15,840	15,840	15,840	15,840	15,840	15,840	15,840	15,840	15,840
surplus			**5,810**	**10,560**	**12,680**	**2,760**	**5,860**	**4,620**		**1,830**		
deficit	**14,290**	**10,620**							**1,140**		**4,440**	**13,710**

Putting it all together:
The monthly forage balance sheet gives you a good idea of what to expect during the year. You can use this information to plan your management activities. For example, you can stockpile part of a pasture or cut it for hay when you have a surplus and use it during the months you have a deficit, such as in the winter. You will also need to keep your animals off the pasture during the winter when the grass is not growing or growing very slowly. Overgrazing at this time can slow down spring growth or, if done for long periods, will severely damage your pasture. In our example above, we could probably graze until mid November. Looking at the height of the forage is the best way to decide when to start and stop grazing. Remember, the forage balance sheet is an estimate. The yields will vary each year, so you should be prepared for a drought or an early freeze. You can also revise the information each month as your animals gain weight during the season. Getting the proper balance of animals and forage is the foundation to good grazing management.

Help is Available

NRCS Natural Resources Conservation Service

SMALL SCALE SOLUTIONS FOR YOUR FARM

Technical Help Is Available

Your local Natural Resources Conservation Service (NRCS) office has experienced conservationists that can assist you with balancing your animals with your forage. They can also help you develop a Conservation Plan to solve other problems you have identified on your farm.

There is no charge for our assistance. Simply call your local office at the number listed below to set up an appointment and we will come to your farm.

You may also be eligible to receive financial assistance, through a state or federal program. Your NRCS office will explain any programs that are available so you can make the best decision for your operation. All NRCS programs and services are voluntary.

Helping People Help the Land

For More Information Contact the:

Natural Resources Conservation Service

60 Quaker Lane, Suite 46
Warwick, RI 02886
(401) 828-1300
Web Address: www.ri.nrcs.usda.gov
E-mail Address: NRCSInfo@ri.usda.gov

NRCS accepts applications on a continuous basis throughout the year.

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