Finding the Balance

Finding the balance between forage supply and animal demand requires you to calculate how much forage there is, how much the herd will consume over a given period, and how much forage needs to remain for a healthy pasture. With that knowledge, you can decide how long your herd can graze the pasture, or conversely, how many animals can safely be placed on the pasture for the season.

Step 1.
Estimate grazeable acres and forage production

First, a realistic estimate of how many acres of the pasture the livestock actually use is required. In most cases, it is unlikely the entire area of the pasture will be grazed. If the pasture has areas of dense bush, sloughs or steep slopes, for example, these acres need to be subtracted from the total area. Next, estimate the amount of forage in pounds per acre of dry matter (DM) produced by the pasture during the growing season. Yields from previous hay production can be used to make an estimate. Clipping, drying and weighing forage samples from the pasture will also provide an estimate of forage production.

Example:
Of a total of 160 acres, a pasture has 20 acres of bush and 15 acres in sloughs, leaving 125 acres of grazeable pasture. The estimated average forage production is 2,500 pounds per acre. Therefore the total forage production is:

- 125 acres X 2,500 lbs/acres
  = 312,500 lbs of total forage production (DM).

Step 2.
Estimate the utilization rate

The utilization rate is the amount of forage that may be removed from the stand without causing it harm. It includes all uses of the forage – the amount taken by the herd, in addition to the amounts lost to trampling, insects and other losses. What is left behind at the end of the grazing season will ultimately determine what the yield potential will be the next year.

Different forages can tolerate different levels of grazing. Soil and moisture conditions must also be taken into consideration.

- For pastures with native forages, a good rule of thumb is to take half and leave half (a 50 per cent utilization rate).
- On lighter soils and in droughtier conditions, the utilization rate may only range from 50 per cent down to 30 per cent (leaving 50 to 70 per cent behind).
- Most tame forages can handle 60 per cent utilization, but rates greater than 70 per cent will decrease forage production in the longer term.

The actual amount of available forage will be a percentage of the total dry matter yield of the pasture. For example, if the pasture referred to in the previous step is a good quality tame forage stand, only 187,500 lbs is available for grazing (60% of 312,500).

Step 3.
Estimate the forage requirement for the herd

The forage requirement of the herd will vary based on livestock weight. Based on the make-up of the herd (cows, steers, etc) and the number of animals, the amount of forage required daily can be calculated.

Cattle will eat between 1.5 and 3.5 per cent of their body weight per day, depending on age and sex. For cows, 2.5 per cent of the body weight is commonly used. Calves are not considered until they reach 600 pounds.

A 1,500-pound cow will consume 37.5 lbs of forage dry matter per day (1,500 lbs X 2.5% = 37.5 lbs).

For steers, 3.0 per cent is commonly used. A 750-pound steer will consume 22.5 lbs per day (750 lbs X 3.0% = 22.5 lbs).

Step 4.
Determining the stocking rate

With the above information, the carrying capacity of the pasture can be estimated and a appropriate stocking rate selected.

Example:
Using the information supplied in the previous steps, the following is an example of how to calculate a stocking rate.

What we know
- There are 125 acres of grazeable pasture
- Total forage dry matter yield is 312,500 lbs.
- The pasture is tame forage with a 60 per cent utilization rate, giving a net yield available for the herd of 187,500 lbs.
- The herd consists of 50, 1,500 lb cows with calves.
- Each cow consumes 37.5 lbs of forage per day (calves don't count).

Question one: How long could this herd stay on this pasture?

Calculate how much forage is required for the herd.

- 37.5 lbs/day X 50 head
  = 1,875 lbs/day for the entire herd.

Put the information together to get the total grazing days.

- 187,500 lbs of available forage ÷ 1,875 lbs/day consumption
  = 100 (99.7) days.

Question two: How many cows could be put on the pasture if the grazing period was 130 days?

Calculate how much forage each cow needs for 130 days.

- At 37.5 lbs/day of forage per cow X 130 days
  = 4,875 lbs of forage is required by each cow for the duration of the grazing period.

Knowing the requirements of each animal, and the amount of forage available, calculate how many cows may be placed on the pasture.

- 187,500 lbs of total available forage ÷ 4,875 lbs
  = 38 head.