Use these handy tools to estimate forage supply and demand

Planning the grazing on your property is all about supply and demand. Simple, right? Well, maybe, maybe not. If you have multiple years of experience on a property, that certainly makes it easier. But what if you are new to a property, or thinking about changing the type or number of animals on it? There are a few tools and concepts you can use to get started.

One of the most important things to know is the supply of forage on your property. It's relatively easy to determine the forage supply on smaller properties that are uniform in production. When a property is larger in size, or production varies across the area, determining your forage supply gets a little more complicated.

Clipping and weighing

For smaller, uniform properties, a simple clip and weigh technique can be useful. This technique involves placing a small hoop randomly in a representative location in a pasture. All of the current year's growth within the hoop is clipped, or cut, using shears. The clipped forage is then air dried. Once dried, the forage is weighed, usually in grams.

If you know the area of the hoop, you can then convert the figure from grams per hoop to pounds per acre. Visit https://bit.ly/clip-weigh for an instructional video on how to use the clip and weigh method.

To help streamline the math, UW Extension's Wyoming Ranch Tools site (uwyoextension.org/ranchtools) offers an online clip and weigh calculator. This tool, which also accounts for the water weight within the plants, can be found at https://bit.ly/stocking-tool.

Determining forage demand

Using the clip and weigh tool, you'll notice there's a question about what species of animals will be grazing your property. This is an important detail because animals of different sizes will consume different amounts of forage. Often 2.25–2.5% of an animal's body weight is used to estimate how much air-dried forage they will consume daily. So, for a 1,000-pound animal, you can estimate they will consume 675–750 pounds of forage per month (not including the weight of water in the feed).

1,000 lbs x 0.025 = 25 lbs/day

25 lbs/day x 30 days/month = 750 lbs/month

You may have heard the term animal unit month (AUM). An AUM is the amount of forage that a 1,000-pound-cow and her un-weaned calf will consume in a month. As mentioned above, that is usually around 750 pounds.

Now, if your livestock are only 1,000-pound cows with calves, then you are in luck. You won't need to do any more calculations. Your forage demand will be very close to 750 pounds per cow/calf per month. However, most mature cattle these days are larger than 1,000 pounds—and what if you don't have cattle at all? Horses, sheep, and goats are all common on rural properties.

To estimate forage demand for grazing animals other than the 1,000-pound cow/calf, you'll need to do one more calculation. Assuming a daily consumption rate of 2.5% of the animal's body weight, you can determine a conversion factor (animal unit equivalent) using the ratio of that animal's weight to the 1,000-pound cow's weight. For instance, a mature sheep might weigh 200 pounds. 200 lbs/1,000 lbs = 0.2. This is the sheep's animal unit equivalent (AUE), a conversion factor to figure out the 200-pound sheep's forage demand. Since the 1,000-pound cow/calf consumes an estimated 750 pounds of forage per month, the sheep's demand can be estimated at 0.2 x 750 = 150 pounds of forage per sheep per month.

For more information on AUM

To learn more about using animal unit months to estimate forage demand, check out the UW Extension bulletin "Animal Unit Month Concepts and Applications for Grazing Rangelands" at https://bit.ly/estimate-aum.

Here are some common types of livestock and wildlife with their conversion factors based on estimates of their respective body weights.

Class of animal	Animal unit equivalent (AUE)	Pounds of dry forage/month
Cow, 1,000 lbs, dry	0.92	690 lbs/month
Cow, 1,000 lb, with calf	1.00	750 lbs/month
Cow, 1,200 lbs, with calf	1.20	900 lbs/month
Cow, 1,400 lbs, with calf	1.40	1,050 lbs/month
Cow, 1,600 lbs, with calf	1.60	1,200 lbs/month
Bull, mature	1.35	1,013 lbs/month
Cattle, 1 year old	0.60	450 lbs/month
Cattle, 2 years old	0.80	600 lbs/month
Horse, mature	1.25	938 lbs/month
Sheep, mature	0.20	150 lbs/monthw
Lamb, 1 year old	0.15	113 lbs/month
Goat, mature	0.15	113 lbs/month
Kid, 1 year old	0.10	75 lbs/month
Deer, white tailed, mature	0.15	113 lbs/month
Deer, mule, mature	0.20	150 lbs/month
Elk, mature	0.60	450 lbs/month
Antelope, mature	0.20	150 lbs/month
Bison, mature	1.00	750 lbs/month
Sheep, bighorn, mature	0.20	150 lbs/month

Wyoming Ranch Tools site

In addition to its clip and weigh tool, the Wyoming Ranch Tools website offers a "past use" tool that can be useful for determining forage supply, especially on properties that are larger in size or that vary in production across the acreage. This tool provides an estimate of forage production based on the past grazing use of the property.

Once you have an estimate of forage supply, either from past use, clip and weigh, or another method, the Wyoming Ranch Tools site has two more calculators that can help you plan grazing based on the size and number of livestock that will be on the property.

If you are grazing multiple species (e.g., sheep and cattle) or animals that have significantly different body weights (e.g., yearling steers and mature cows), you'll need to calculate the forage demand for each class of animals separately and then add them together to estimate your total forage demand.

Please remember that all of these tools only provide an estimate of the supply and demand. As the grazing manager, consider these estimates to be good starting places that will need refinement. Forage quality, reproductive status, age, physical activity, species' diet preferences, sampling error, weather, and other factors will all cause variation from initial calculations. As you manage grazing on your property, it's important to monitor your pastures and your livestock's health and body condition.

Barton Stam's favorite math problems involve animal unit months. A UW Extension educator based in Hot Springs County, he can be contacted at brstam@uwyo.edu or (307) 864-3421.

Rangeland Analysis Platform

The Rangeland Analysis Platform is an exciting new tool designed for use on rangelands in the Intermountain West. This resource enables you to draw a polygon around a piece of land and then uses different data sets to calculate an estimate of the forage production. To check out the Rangeland Analysis Platform, visit rangelands.app.