

■ Stocking Rate and Carrying Capacity

Stocking rate: defined as the number of specific kinds and classes of animals grazing or utilizing a unit of land for a specified time period, commonly expressed as animal units per acre. An animal unit is considered to be one mature cow of approximately 1,000 pounds with a calf of up to six months of age (see animal unit equivalent guide for proper conversions for other classes or kinds of grazing animals). Stocking rate is typically expressed as the number of animal units grazed for a specific time period (days, months) in a given pasture or unit.

Carrying capacity: defined as the maximum stocking rate possible that is consistent with maintaining or improving vegetation or related resources. It may vary from year to year on the same area due to fluctuating forage production. Carrying capacity is usually expressed as the number of animal units that can be grazed for a specified time period. In short, carrying capacity is the amount of forage available for grazing animals and expressed as the number of available animal unit months (AUMs), or number of animal units grazed for one month.

Tip: Stocking rate should equal carry capacity for proper resource management.

Methods to estimate carrying capacity:

Carrying capacity or estimating forage quantity can be estimated in several ways. Two common techniques used in the field include clip and weigh, and interpreting forage production based upon a range condition evaluation. Clip and weigh method requires actual harvesting of standing forage at a given time to predict available forage. A range condition evaluation estimates baseline species composition and requires interpretation to arrive at a recommended stocking rate using the NRCS guidelines for a specific range site and region.

Clip and Weigh: The most accurate method to assess the amount of forage in a pasture is to clip 5 to 15 samples of a 2 square foot area, dry and weigh (using a gram scale) each sample. The average amount of forage available is equal to the dry weight of all samples collected divided by the number of samples multiplied by 50 to calculate the weight in pounds per acre. It is important to clip several samples and to be sure these samples represent the variation within the pasture. The number of samples necessary depends on the uniformity of the pasture. The more variable the forage growth, the greater the number of samples necessary.

Once forage production for the pasture is determined, actual stocking rate will be calculated using a harvest efficiency multiplier. Harvest efficiency usually varies from 25 to 35% on native rangeland depending upon level of grazing management and 35

to 50% on tame pasture depending upon grazing management.

Example: If calculated herbage production is 2000 pounds per acre on native rangeland being managed using seasonlong grazing, available forage would be 500 pounds per acre ($2000 \text{ lb./ac} \times 0.25 = 500 \text{ lb./ac}$). The 500 lb./ac would then be divided by the forage consumed in pounds per month by kind or class of animal. See Animal Unit Equivalent Guide on page 106 for monthly forage intake amounts. For example, if grazing a 1000 pound cow with calf, forage consumption would be 790 pounds per month. Since available forage in our example is 500 pounds per acre, the stocking rate would be 0.63 Animal Unit Months per acre (500 lb./ac divided by $790 \text{ lb./month} = 0.63$ animal unit months/acre).

Range Condition Analysis: To estimate stocking rate based upon a range condition evaluation, consult your local County Extension Agent or NRCS office. See range condition section on page 85 for further information on range condition evaluation.

Tip: Estimated stocking rate could be based on local knowledge and past stocking rates if range condition, health and trend have met the producers objectives without degrading the resource.

Animal unit equivalents guide¹

Kinds/classes of animals	Animal Unit Equivalent (AUE)	Forage consumed in Pounds (air dry)	
		Day	Month
1000 lb. cow, dry	0.92	24	727
1000 lb. Cow, with calf	1.0	26	790
1200 lb. cow with calf	1.15	30	909
1400 lb. cow with calf	1.29	33.5	1022
Bison cow mature	1.00	26	790
Bison bull mature	1.50	39	1182
Horse, mature	1.25	32.5	988
Sheep, mature	0.20	5.2	158
Goat, mature	0.15	3.9	118
Deer, white-tailed, mature	0.15	3.9	118
Deer, mule, mature	0.20	5.2	158
Elk, mature	0.60	15.6	474
Antelope, mature	0.20	5.2	158
Sheep, bighorn, mature	0.20	5.2	158
Jackrabbit, white-tailed	0.02	0.5	15
Prairie dog	0.004	0.1	3

¹NRCS National Range and Pasture Handbook (1997) and Montana State University Range and Pasture Records (1993).

The animal unit is a convenient denominator for use in calculating relative grazing impact of different kinds and classes of domestic livestock and common wildlife species. An animal unit (AU) is generally one mature cow of approximately 1000 pounds and a calf as old as 6 months, or their equivalent (AUE). An animal unit month (AUM) is the amount of forage required by an animal unit for one month.