

Grazing Management Adjustments for **Healthy Rangelands**



You can help sustain the productivity and health of your rangeland by balancing forage production with animal unit size.

Alberta



Grazing Management Adjustments for Healthy Rangelands

As a livestock producer, the number one stewardship practice you need to consider is balancing animal numbers with the available forage supply of your grazing lease. The combination of too many animals and not enough forage can create serious problems for animal performance and range health.

When you adjust your animal units for an increased animal unit size, it creates a balance between animal performance and range health.

Understanding Animal Unit Months

Today's animal is much larger than the animal of the past and, therefore, requires more feed to support its frame size and performance requirements. In order to maintain a proper balance between forage supply and animal demand, you need to understand an animal's monthly forage requirement. A common unit of measure is the Animal Unit Month (AUM).

An AUM is the amount of dry matter or forage that one animal unit (AU) uses in one month. The standard AU grazing animal is a 1,000 lb. cow with or without an unweaned calf up to six months old. However, because the average size of livestock has changed since that standard was set, you must account for differences from the standard.

Carrying and Grazing Capacity

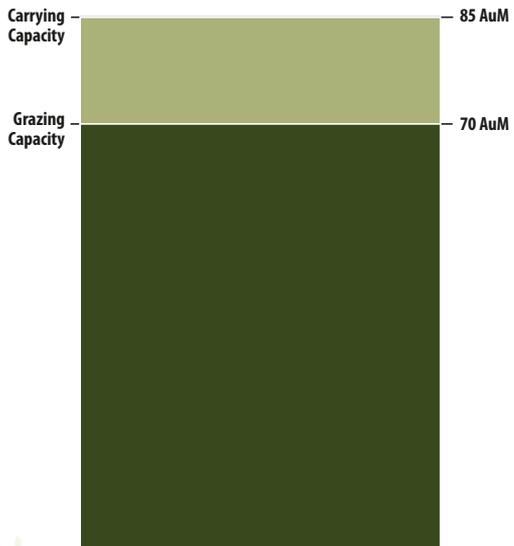
Your grazing lease agreement (disposition, license or permit) will have a certain **carrying capacity** that you pay for. That **carrying capacity** is the stocking rate for a specific area of land and is written in Animal Unit Months (AUMs). The carrying capacity reflects the maximum number of AUMs that can be supported on a lease, given optimal livestock distribution.

In most cases livestock's grazing habits and preferences will result in less than optimal distribution. Consequently, if you were to stock a lease at carrying capacity without managing for more uniform livestock distribution, those areas where livestock prefer to graze, such as tame forages and riparian areas may become overgrazed and other less-preferred areas may be undergrazed. Over time, this grazing pattern can reduce the health and carrying capacity of your grazing lease.

Range Management During Drought

During drought, it's important to recognize that forage yields are typically below what is normal for your grazing lease. Depending on the severity of the drought, only light grazing will enable plants to stay healthy and retain litter. When moisture is scarce, rangelands with adequate litter reserves will produce more forage than those with less litter. If the drought is severe, total rest may be necessary to prevent damage to your rangeland.

Figure 1. Relationship between Carrying and Grazing Capacity



The **grazing capacity** is the stocking rate for the lease that accounts for factors such as livestock distribution and range health. This stocking rate will often be less than the carrying capacity and is based on current management. Managers who use best management practices and tools in their operations, such as herding; attractants; water developments; grazing systems; and cross-fencing can bring the grazing capacity closer to the carrying capacity.

Stocking the lease within the grazing capacity is essential to maintaining range health. The carrying and grazing capacity of the lease is found in the stock return form that you complete each year.



Range Health

Range Health - refers to the ability of the rangeland to perform key functions such as: producing forage; protecting the soil; storing, retaining and releasing water; recycling nutrients; and maintaining biodiversity.

When these functions are not performing properly it can result in reduced forage, fewer desirable species, and less litter. It can also increase erosion and invasive plants. The grazing capacity relates to the checks and balances that are necessary to help maintain a healthy range.

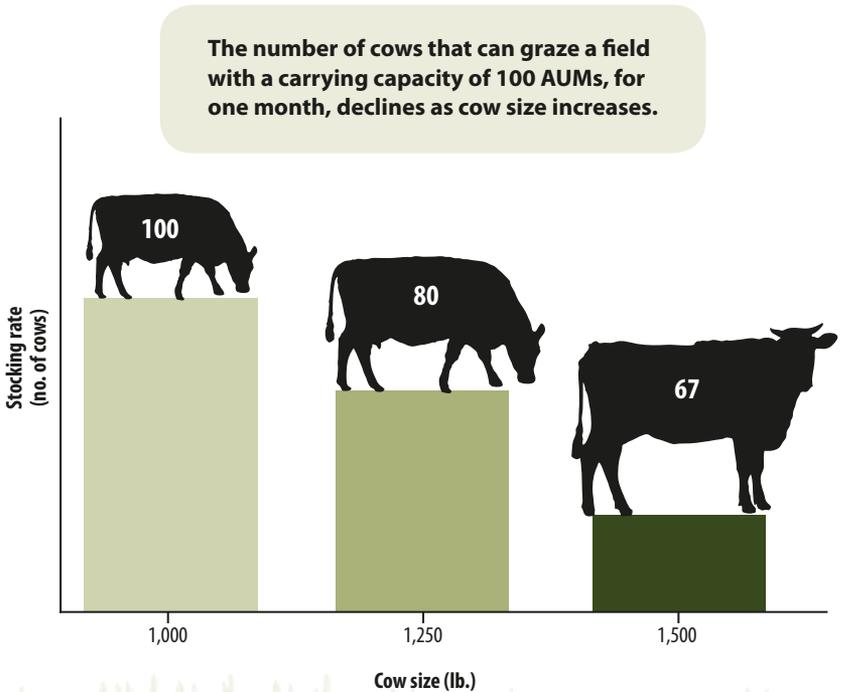
I'm trying not to overgraze, so I start with a different field each year. That way each field gets a rest and is grazed at a different time of year."

*Rob Chisholm
Three Walking Sticks Ranch, Claresholm, Alberta*

The standard animal unit (AU) reference used to establish the carrying and grazing capacity for public lands is a 1,000 lb. cow, with or without an unweaned calf up to six months old. It's important to recognize that there are many variations in the size, class and kind of animals that graze public land in Alberta. As a grazing disposition holder, you must adjust your stocking rates to reflect the forage requirements of the type of livestock you choose to graze.

The most common adjustment is for cows larger than the standard 1,000 lb. A relatively simple and common method of adjusting for animal size is to use an Animal Unit Equivalent (AUE). A general rule of thumb is to increase the standard AU by 0.1 for every 100 lb. over the 1,000 lb. mark. Conversely, you may subtract 0.1 for every 100 lb. under the 1,000 lb. mark. A chart showing common AUEs is shown below (Figure 2). Table 1 shows adjustments (AUEs) for livestock type and class.

Figure 1. Relationship between stocking rate and cow size





**Table 1:
Livestock Animal Unit Equivalents**

Beef Cattle

1 (1,000 lb.) cow with or without unweaned calf	= 1.0 animal unit (AU)
1 (1,200 lb.) cow with or without unweaned calf	= 1.2 animal unit equivalent (AUE)
1 (900 lb.) cow with or without unweaned calf	= 0.9 AUE
1 (750 lb.) yearling steer or heifer	= 0.75 AUE
1 (1,500 lb.) bull	= 1.5 AUE

Note: Add 0.1 AUE for every 100 lb. that the cow is over the standard 1,000 lb. AU (i.e., 1,400 lb. AU = 1.4 AUE)

Horse

Three-year-old horse and older (1,500 lb.) horse	= 1.5 AUE
1 yearling horse (750 lb.)	= 0.75 AUE
Two-year-old horse (1,000 lb.)	= 1 AUE

Sheep

5 (100 lb.) ewes (with or without unweaned lambs)	= 1 AUE
Weaned lamb/kid (to 12 months old)	= 0.15 AUE
Ram/buck	= 0.26 AUE

Bison

1 bison cow (1,000 lb. with or without unweaned calf)	= 1 AUE
1 bison cow (900 lb. with or without unweaned calf)	= 0.9 AUE
1 bison bull (1,800 lb.)	= 1.8 AUE
1 bison yearling (500 lb.)	= 0.5 AUE
1 bison 2-year-old (700 lb.)	= 0.7 AUE

“We calculate our cows at 1,250 pounds since the herd is mostly commercial black and red Angus, with a little Gelbvieh.”

Linnie Blades, Big Fire Ranch, Nanton, Alberta

Based on this understanding of animal unit months, animal unit equivalents and grazing capacity, let's take a look at some sample calculations.

Example 1:

Adjusting the grazing period based on a fixed herd size:

Grazing Information:

Grazing capacity = 200 AUMs

Herd size = 50 cow-calf pairs

Average cow herd size = 1,300 pounds

In this example, you want to know how many months (or days) you can graze this lease for. You also want to make sure your animal numbers are in balance with the available forage supply.

First, determine the number of months (or days) you can graze, based on a 50 cow-calf pair herd adjusted for larger size (Animal Unit Equivalent).

- ✓ Add 0.1 AUE for every 100 lb. that the cow is over the standard 1,000 lb. AU (for example, 1,300 lb. AU = 1.3 AUE)
- ✓ 50 Animal Units \times 1.3 = 65 AUs
- ✓ Divide the number of adjusted AUs (65 AUs) into the lease grazing capacity of 200 AUMs
- ✓ 200 AUMs divided by 65 AUs = a grazing period of about 3 months or 90 days

Note: If you calculated this based on only 50 AUs, you would be grazing about one-third more forage than is recommended. This added grazing pressure could create range health problems such as: soil erosion, loss of desirable plants, reduced water quality and increased weeds.

Example 2:

Adjusting the Animal Units based on a fixed grazing season:

Grazing Information:

Grazing capacity = 200 AUMs

Herd size = 50 cow-calf pairs

Grazing need = 4 months

Average cow size = 1,300 pounds

Based on the grazing capacity and a grazing period of four months, you want to know how many animal units you can graze on this lease while ensuring your animal numbers are in balance with the available forage supply.

- ✓ Divide the grazing capacity of your lease by the number of months grazing season required = $200 \text{ AUMs} \div 4 \text{ months} = 50 \text{ Animal Units}$
- ✓ With a standard cow-calf herd there is enough forage to graze 50 head. However, your cows are 1,300 lb. therefore you need to adjust for this too.
- ✓ $50 \text{ AUs} \div \text{Adjustment Factor of } 1.3 = 38 \text{ AUs}$
- ✓ You could graze this lease with 38 animal units for approximately a 4 month grazing period.

Note: If you had grazed your lease for four months with 50 AUs, this would have created an overgrazing situation, which in turn could have created range health problems for your lease, such as: increased soil erosion; loss of desirable plants; reduced water quality; and increased weeds.

Self Test for producer:

- Step 1:** Determine the average weight of your herd in pounds, eg. 1250 lbs.
- Step 2:** Add an additional 0.1 for each 100 lbs of weight the herd is above the standard (1000 lb.). For example, 1250 lb. = 1.25.
- Step 3:** Divide your grazing capacity in AUMs (found on your stock return form) by your adjusted animal units, eg. 1.25. This is the number of larger-sized cows you can safely graze on the lease.
- Step 4:** Enter the adjusted animal units into your record keeping books such as your annual stock return form.
- Step 5:** To determine how many AUs you can graze for a particular grazing period : Divide your adjusted animal units by the length of time, in months, that you plan to graze your lease. This number is the number of total AUs you can graze each month.

Year	Example 2007	2008	2009
Average animal weight of herd (in pounds)	1,250 lb.		
Animal Unit Equivalent - Add an additional 0.1 for each 100 lbs of weight the average animal is above the standard	1.25 AUE		
Grazing Capacity - This is found your annual stock return form	200 AUMs		
Adjusted Stocking Rate - Divide your grazing capacity by your animal unit equivalent. Be sure to keep this number and record it on your stock return form	200AUM/ 1.25 = 160AUs for 1 month grazing		
Animal Units - Determine how many AUs can be grazed for a specific grazing period by dividing your adjusted animal units by the number of months you plan to graze the lease	160 AUs /4 months = 40 AUs each month		

Note: Changing moisture conditions and other factors will require you to monitor the lease forage and consider adjusting the number of grazing days to ensure there is sufficient feed for your animals and carryover to maintain range health. If your average herd size changes you will need to re-calculate your adjustment. If your range health is declining you should investigate whether animal unit size is a factor, and if so, adjust accordingly.

Another Method for Adjusting for Animal Unit Size

The Animal Unit Equivalent (AUE) may also be calculated based on the live animal weight through the use of a metabolic weight formula. This method includes additional adjustments to account for factors such as trampling, wastage, cow and calf forage consumption.

For More Information:

To learn more about your lease, please contact:

Alberta government rangeland agrologists or range management specialists at 310-0000, or visit www.srd.gov.ab.ca/land

Alberta Sustainable Resource Development aims to ensure Alberta's public lands, including rangelands, are healthy, productive, and sustainable.

Additional information:

<http://www.agr.gc.ca/pfra/land/fft1.htm>

<http://www.agric.gov.ab.ca/app21/rtw/index.jsp>