

# AGRI-FACTS

Practical Information for Alberta's Agriculture Industry

Revised March 2017

Agdex 420/16-1

## Using Animal Unit Month (AUM) Effectively

The concept of the “animal unit month” (AUM) is useful to help range and pasture managers calculate suitable stocking rates for pastures under a wide variety of conditions.

To optimize the use of available pasture resources, it is important to understand how the AUM is defined and utilized. This understanding can help to calculate the best stocking rate to produce the maximum returns without causing damage to grassland resources.

### Defining the animal unit

An “animal unit” (AU) is defined as one mature cow and her suckling calf weighing a cumulative 1,000 pounds (a 920-pound cow with an 80-pound calf) requiring 26 pounds of dry matter (DM) forage per day. An animal unit may also be only a 1,000-pound cow that requires about 26 pounds of DM forage per day.

One animal unit is the standard base used when calculating average stocking rates for range and pasture. This same principle can also be applied to horses, sheep, goats and other grazing animals. However, adjustments to create animal unit equivalents based on actual animal size are very important when calculating out the number of acres (hectares) required or number of animals needed to put on the land available for the grazing season.

### Animal unit equivalents as adjustments based on animal size

An animal unit equivalent (AUE) is an adjustment to the standard animal unit that takes into account that all animals do not weigh 1,000 pounds and that the amount of forage consumed is not 26 pounds per day.

Most modern beef cows weigh anywhere from 1,200 to 1,400 pounds (or larger). Cows in this weight range can consume between 31.2 to 36.4 pounds of DM, or 21.5 to 40 per cent, more than the 1,000-pound AU cow-calf pair. Therefore, these larger cows would have AUEs of 1.21 to 1.4 compared with the standard animal unit, if calculating these equivalencies based on amount of feed consumed.

Various other types of stock are assigned AUEs based on differences in size and consumption compared with the standard AU. For example, a mature bull

is 1.3 AUE, a yearling steer or heifer is 0.67 AUE and a weaned calf is 0.5 AUE.

Table 1 below shows the adjustments created according to changes in metabolic requirements in relation to the weight of the animals. According to the study done at the Dickenson Research Extension Center, these changes are not linear, thus showing that the requirements change at a different rate than does the animal weight.

*Understanding  
the AUM  
can help in  
calculating  
stocking rates  
for maximum  
returns*

| <b>Animal live weight (lbs)</b> | <b>Animal unit equivalent = BW <sup>0.75</sup> (% of 1,000 lbs)</b> |
|---------------------------------|---|
| 600                             | 0.682   |
| 650                             | 0.724   |
| 700                             | 0.765   |
| 750                             | 0.806   |
| 800                             | 0.846   |
| 850                             | 0.885   |
| 900                             | 0.924   |
| 950                             | 0.962   |
| 1,000                           | 1.000   |
| 1,100                           | 1.074   |
| 1,200                           | 1.147   |
| 1,300                           | 1.217   |
| 1,400                           | 1.287   |
| 1,500                           | 1.355   |
| 1,600                           | 1.423   |
| 1,700                           | 1.489   |
| 1,800                           | 1.554   |
| 1,900                           | 1.618   |
| 2,000                           | 1.682   |
| 2,200                           | 1.806   |
| 2,400                           | 1.928   |
| 2,600                           | 2.048   |
| 2,800                           | 2.165   |
| 3,000                           | 2.280   |

Adapted from the Dickinson Research Extension Center, North Dakota State University, under the terms of the Creative Commons License <https://creativecommons.org/licenses/by-nc-sa/3.0/legalcode>

## Determining the AUM

As shown in Table 2, the animal unit month (AUM) is determined by first understanding that the daily average rate of consumption is approximately 2.6 per cent of a cow's body weight on a dry matter basis, meaning that a 920-pound cow is going to be consuming 26 pounds of forage per day if she were to produce 10 pounds of milk per day.

Her 80-pound calf is not going to be eating as much because most calves at this weight are relying predominantly on milk compared with forage. Thus, the definition of an animal unit month (AUM) is one animal unit (1.0 AU) consuming approximately 800 pounds of forage on a monthly basis.

|  | <b>Daily forage dry matter intake (lbs)</b> |
|--|---|
| Average 920-lb cow producing 10 lb milk per day          | 26.0  |
| Extra energy needed by the calf from grazing*            | 0.2   |
| Total daily consumption (lb)                             | 26.2  |
| Total forage consumption for 30.5 days (average 1 month) | 799.1                                       |

\* An 80-lb calf is typically not going to consume a significant amount of forage to make a difference in the expected daily intake of the cow-calf pair that makes up the animal unit.

## Differences in consumption rates

Forage consumption rates can vary from as low as 1.5 per cent of body weight to as high as 3.5 per cent of body weight. However, estimating average consumption for most grazing animals is a relatively safe alternative to reduce the complexities that go with calculating out the stocking rate for a pasture.

The two primary factors that affect consumption rates are forage quality and quantity. Where digestibility decreases as forage plants mature, intake can also decrease if there is less palatable plant material available. A higher level of forage intake can be expected in pastures that are composed primarily of vegetative growth versus more mature growth. However, forage intake may also increase if there is a significant amount of green vegetative growth available for animals to select, compared with mature, dry stems and leaves.

Typically, early season growth or forage re-growth in managed grazing systems will provide the highest quality and, therefore, higher consumption rates. However, forage plants must be about 8 to 10 inches (20.3 to 25.4 cm) in height or at the 3- to 4-leaf stage for them to be ready for grazing and to provide enough green material for animals to meet their daily intake demands.

Forage growth in extensive grazing systems will provide more mature forage and, therefore, reduce the amount of forage available for consumption. Other factors such as animal age, physiological stage (dry and pregnant or lactating) or level of supplementation will also affect pasture consumption rates.

For a more accurate stocking rate, adjustments should be made for both forage consumption and for other losses that occur within a grazing system. Animals will trample and spoil feed as they move throughout a pasture. Typically, 80 per cent of what animals consume will be returned as part of the residue left behind.

Weathering and forage senescence (aging) can also contribute to forage losses on pasture. Thus, the total forage disappearance on pasture may exceed the daily forage intake values listed in Table 2.

Management practices such as rotational grazing versus season-long grazing, pasture water systems or higher stocking densities may be used to increase forage consumption and minimize forage losses due to factors such as trampling and spoilage. To maintain a healthy forage stand, 50 to 60 per cent of the yearly plant growth should be left standing when grazing events are completed.

## Summary

A land manager can use the AUM definition as a starting point in determining stocking rates, but must remember to make the necessary adjustments to animal size, consumption rates, trampling and spoilage effects to predict realistic disappearance rates.

Coupling these aspects with reasonable estimates on forage production, both as initial growth and re-growth, makes it possible to establish stocking rates for any given range or pasture.

Prepared by  
Alberta Agriculture and Forestry

More information, contact:  
Alberta Ag-Info Centre  
Call toll free: 310-FARM (3276)  
Website: [agriculture.alberta.ca](http://agriculture.alberta.ca)

RV03/17