

January 28, 2020

Hello On Pasture reader!

In his piece “Here’s the Impact of Fencing and Planning on Grazing Days and Profitability,” (<https://onpasture.com/2020/01/27/heres-the-impact-of-fencing-and-planning-on-grazing-days-and-profitability/>) Tom Krawiec talks about “Standard Animal Units” (SAU) and he uses them to help determine how much forage he needs to feed his herd. A Standard Animal Unit is derived from a concept initially developed in the early 1900s when managers were wrestling with how many cows could graze on western range without causing damage. Back then the 1,000 pound cow was the norm, and so an Animal Unit was a 1,000 pound cow with a calf, and an Animal Unit Month was the amount they would eat in a month.

Today, cows tend to weigh more, and we’re grazing other kinds of livestock too. But we still use the 1,000 pound cow and her calf as the basis for our math. We simply adjust the unit for different weights and classes of animals. So, as you’ll see on the next page, a 1,300 pound cow is 1.3 of an Animal Unit. A mature sheep is .17 of an Animal Unit, and so on.

You’ll notice that this is different than the number Tom uses. His animal unit comes from a chart provided by Ranch Management Consultants that shows a 1300 pound cow is 1.23 of an animal unit. Why the difference? Well, if you look at number 3 on the last page in this handout, you’ll find the equation for determining the metabolic weight of an animal by weight. When you do the math, you’ll find that a 1300 pound cow is 1.23.

I admit to not being able to do this math without a fancy calculator. So I use the Animal Unit Equivalent table provided from Montana Natural Resources Conservation Service. The difference is not enough to have a large impact.

There you go. I hope it helps!

Kathy
Editor, On Pasture
<https://onpasture.com>
kathy@onpasture.com

Montana Table 6-5 Animal Unit Equivalent Guide

ANIMAL KIND / CLASS	ANIMAL UNIT EQUIVALENT (AUE)	NO. OF ANIMALS EQUAL TO 1 AU	AIR-DRY WEIGHT OF FORAGE CONSUMED (lbs.)		
			DAY	MONTH	YEAR
Cow, dry (1000 lbs.)*	.85	1.2	25.5	765	9180
Cow (1000 lbs.), with calf to 6 months	1.0	1.0	30	915	10,980
Cow (1100 lbs.), with calf to 4 months	1.1	.91	33	990	11,880
Cow (1200 lbs.), with calf to 4 months	1.2	.83	36	1080	12,960
Cow (1300 lbs.), with calf to 4 months	1.3	.77	39	1170	14,040
Calf, 4 months to weaning	0.3	3.3	9	270	3240
Yearling cattle, 7-12 months	0.56–0.65	1.5–1.8	17-19.5	510-585	6120-7020
Yearling cattle, 12-17 months	.75	1.3	22.5	675	8100
Heifers, 18-24 months	.86	1.2	26	780	9360
Bulls, 12-24 months	1.2	.83	36	1080	12,960
Bulls, mature (1850 lb. average)	1.5	.67	45	1350	16,200
Horse, yearling	0.75	1.3	22.5	675	8100
Horse, 2 year old	1.0	1.0	30	915	10,980
Horse, mature (1100 lbs.)	1.1	.91	33	990	11,880
Sheep, mature lactating ewe (150 lbs.), with lamb, less than 2 months	0.17	5.9	5.1	153	1836
Sheep, mature non-lactating ewe	0.15	7.1	4.5	135	1620
Lamb, 2 months to weaning	0.06	16.7	1.8	54	648
Lamb, weaned to yearling	0.12	8.3	3.6	108	1296
Lamb, yearling	0.15	6.7	4.5	135	1620
Ram (200 lbs.)	0.17	5.9	5.1	153	1836
Goat, mature	0.15	6.7	4.5	135	1620
Kid, yearling	0.10	10.0	3.0	90	1080
Llama, mature female	.23	4.3	6.9	207	2484
Bison, lactating cow, yearlong average	1.1	.91	33	990	11,880
Bison, lactating cow, spring	1.0	1.0	30	915	
Bison, lactating cow, summer	1.22	.82	36.6	1098	
Bison, lactating cow, fall	1.65	.61	49.5	1485	
Bison, lactating cow, winter	0.65	1.54	19.5	585	
Bison, bull	1.5	0.67	45	1350	16,200
White-tailed deer	.19	5.3	5.7	171	2052
Mule deer	.19	5.3	5.7	171	2052
Elk, mature	.70	1.4	21	630	7560
Moose	.81	1.2	24.3	729	8748
Bighorn sheep	.16	6.25	4.8	144	1728
Antelope	.13	7.7	3.9	117	1404

* Add 0.1 per additional 100 pounds of body weight for dry cows.

Figures are based on a daily air-dry matter intake of 2.2 to 3.0% of body weight, depending on the nutritional demands for the type and class of livestock and wildlife.

Wildlife values are based on the nutritional needs of average-sized breeding females.

Appendix C

Determining Animal Unit Equivalent Based on Livestock Weight

Livestock body size affects the quantity of dry matter consumed. Not all livestock are the same size or weight, and weight variations require adjustments in animal unit equivalents. The University of Nebraska defines an animal unit equivalent as: *a 1,000-pound cow of above average milking ability with a calf less than 3 to 4 months postpartum*. The Society for Range Management defines an animal unit as: *one mature cow approximately 1,000 pounds, either dry or with a calf up to 6 months of age*. In either case, the animal unit equivalent is equal to 1 animal unit, which has a daily dry matter allocation of 26 pounds of forage.

Following are several methods to determine animal unit equivalents based on livestock weight:

1. Holecheck et al. 1989, uses a rough guideline by using 2 percent of the body weight to determine daily dry matter intake per day when values for different seasons are averaged across the year.

2. University of Nebraska, *A Guide For Planning And Analyzing A Year-Round Forage Program*, Nebraska Cooperative Extension EC 86-113, suggests animal weight variations require adjustments in animal unit equivalent values equal to 0.1 animal units for every 100 pounds of liveweight that the animal differs from the standard 1,000 pound animal unit equivalent of 1. Thus, a cow with calf less than 3 to 4 months postpartum that weighs 1,200 pounds would have an animal unit equivalent of 1.2.

3. North Dakota State University, *Animal Unit Equivalent for Beef Cattle*, DREC 98-1020, suggests using the metabolic weight to estimate the daily or monthly forage demand. Metabolic weight is the liveweight to the 0.75 power. Beef cattle animal unit equivalents can be determined for animals of different sizes by calculating their metabolic weight as a percentage of the metabolic weight of a 1,000 pound cow. The following formula would be used:

$$\frac{(\text{Live animal weight})^{0.75}}{1000^{0.75}} = \text{Animal Unit Equivalent}$$