Steps to Convert Clippings to Pounds per Acre

MATERIALS REQUIRED: paper bag, clippers or scissors, scale (in grams) pen and paper.

1. Clip all grazeable vegetation within a 1.92 ft^2 plot (approximately 12"x 24")
2. Weigh the paper bag (in grams)
3. Collect this vegetation and place it in the paper bag
4. Weigh vegetation (in grams) and SUBTRACT the weight of the bag
5. At this point, you need to determine how you will adjust for moisture to determine dry weight of the vegetation. ALL grazing calculations shall be done with the DRY weight of the plant materials clipped. In the National Range and Pasture Handbook, Chapter 4, exhibit 4-2 (page 4ex-3), there is a table that estimates the percentage of air-dry matter in harvested plant material at various stages of growth. Multiply the proper air-dry percentage (i.e. 35 % or 0.35) by the amount of vegetation you clipped.
6. To continue, multiply grams of air-dry forage clipped in your plot times 50. This will convert your clipping to pounds per acres. If using a frame DIFFERENT than 1.92 ft^2, consult the National Range and Pasture Handbook, Chapter 4, page 4-6 to adjust conversion rates.

Upon completion of step 6, you will have air dry forage production in pounds per acres. PLEASE NOTE that it is best to perform multiple clippings within a pasture and average them to get a more accurate average production level. Multiple clippings within each pasture. Can also be used to determine production on individual range sites (ie. Subirrigated vs sands). This will be more accurate than an average for the whole pasture (should consider using NP-ECS-1). If the pasture has had or is currently being grazed at the time of clipping, a determination of the amount of grass removed by livestock is needed. Usually this is determined by finding out how many animals were in the pasture, and for how long. Then you add the pounds removed to the pounds of production per acre. Also, if you are clipping in the middle of the growing season, calculation of the percentage of growth that has occurred will need to be considered (see example 2).

It is important to remember that the amount of vegetation removed in each clipping is 100 % of the available plant. This quanitity is NOT used to calculate a stocking rate, since 100% of the plant is not grazed. In a simple rotation (2 or 3 pastures, grazed once per season) only 25 % of the available plant should be used for livestock grazing (Harvest Efficiency (HE) is 0.25) see page 3. The remainder of the plant should be left for plant health and regrowth (50 %) and other grazing or events that can stress a plant (25 %) such as hail, grasshoppers, drought and wildlife. No matter the grazing system, at least 50 % of the plant should remain at the end of the growing season to maintain and improve plant health.

Production in pounds per acres that is calculated using clippings can now be converted into Animal Unit Months (AUM's) per acre. To complete this calculation, the following are a few basic things that need to be understood.

An Animal Unit Month (AUM) is the amount of forage one 1,000 pound cow and her calf (less than three months old) will consume in one month. One AUM equals 790 pounds of air dry forage. Animal Unit Day (AUD) equals an average of 26 pounds of air-dry

forage per day. The amount consumed by a cow/calf pair is directly related to the size of the animal. If a cow weighs 1200 pounds (instead of 1,000 pounds as "normal sized" cow), then that 1200 pound cow will eat 20 % more forage. Each additional 100 pounds (cow OR calf) will add 0.1 of an AUM to the original 1.0 AUM calculation). To determine the pounds of forage per month this 1200 pound cow will consume, multiply 790 x 1.2. THIS CALCULATION IS VERY IMPORTANT! If the producer has 10 cows in his pasture, but doesn't realize they weigh 1200 pounds (without calves), then you are not accounting for all the forage being removed by livestock in the pasture (see example1).

EXAMPLE 1:

Difference in 1.0 AUM vs. 1.2 AUM

Estimated:

1.0 AUM x 10 animals = 10 AUM removed in 1 month of grazing
10 AUM x 790 pounds = 7900 pounds forage removed

Actual:

1.2 AUM x 10 animals = 12 AUM removed in 1 month of grazing
12 AUM x 790 pounds = 9480 pounds forage removed

planned for 7900 pounds removed
actual use 9480 pounds removed
- 1580 pounds

1580 pounds MORE forage is removed than was planned for

The following example outlines the process to follow when there is clipping data.

Five clippings completed in the pasture. Air-dry weights were: 38.5 grams, 19 grams, 32.5 grams, 36.5 grams, 39.5 grams. The average for the pasture is 166 grams divided by 5 equals 33.2 grams.

Convert from grams to pounds:

33.2 grams * 50 = 1660 pounds/acre (clipped) + 365 pounds/acre (eaten by animals) = 2025 pounds/acres

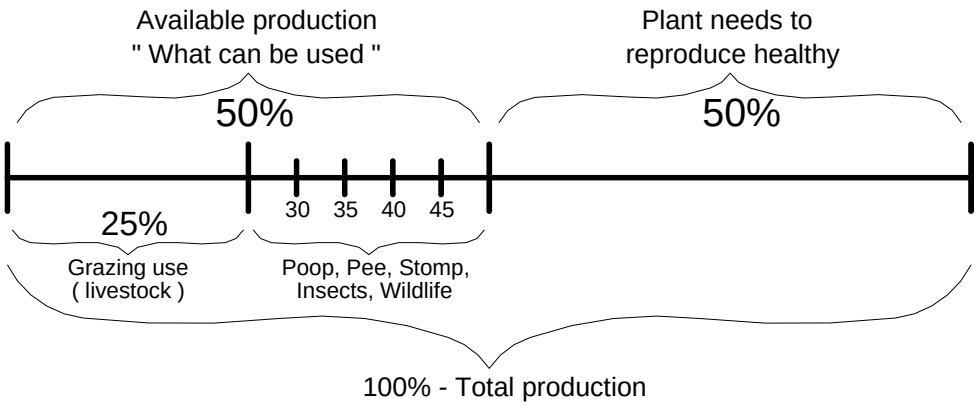
70% of the grasses in the pasture growth curve is complete:

70		100		
----------	=	----------	=	2893 pounds/acre
2025 pounds/acre		?? pounds/acre		

2893 pounds/acre (total forage production) * 0.3 (harvest efficiency) = pounds/acre (useable forage)

868 pounds/acre divided 790 pounds/AUM = 1.1 AUM/acre

Harvest efficiency is a % of total production



Proper Use - % of available	versus	Harvest Efficiency (HE) - % of total	
50% proper use	⟷	25% HE *	
60% proper use	⟷	30% HE *	**
70% proper use	⟷	35 % HE	**

* rangeland
** pastureland (w/proper nutrient management & pest control)

best time to clip:

cool season grasses	⟶	end of June
warm season grasses	⟶	end of September

Calculation to determine amount eaten:

Definitions – AUE – Animal Unit Equivalent
AU – Animal Unit
AUD – Animal Unit Day

number of $head * AUE = AU$

$$AU * \frac{26\,pounds}{AUD} * \frac{number\ of\ days}{number\ of\ acres} = \underline{\quad ? \quad}\ \underline{\textit{pounds per acre}}$$