Setting Stocking Rates – Note Guide

Rangeland Principles (REM 151)

Grazing Principles

• Which animal(s)?

• How many animals?

• When to graze or not graze?
  • How long to graze or rest?

• Where animals graze on landscape?

Calculating stocking: Balance forage ___________ with forage demand ___________

Carrying Capacity

• The number of animals that a piece of land can support on a long-term basis without causing damage to the ecosystem.
  • Expressed as animals/area/year…. usually expressed as ________________.

Stocking Rate

• The number of animals a land manager places on a piece of land for a specified period of time.

Animal Units (AU) = 1AU = 1,000 pounds of grazing animals (ruminant)

  o Cow = 1
  o Horse = 0.56
  o Yearling Steer = 1.3
  o Sheep = 5
  o Jackrabbit = 50

Animal Unit Equivalent (AUE) = a conversion factor reflecting the # of AU in an average animal.

  o Cow = 1
  o Horse = 1.8
  o Yearling Steer = 0.75
  o Sheep = 0.2
  o Jackrabbit = 0.02

Forage Demand of Animals:

  Ruminants: eat _____% of body weight/day in dry matter forage
  Hind-Gut Fermenters: eat _____% of body weight/day dry matter forage

Animal Unit Month (AUM)

• Amount of forage an animal will eat in a month.

• How many pounds is an AUM?

  o Each AU = _________ lbs × 2.5% = ____ lbs/day
  o AUM = _____ lbs × 30 days = ________ lbs

Stocking Rate 4-step Method: Forage-Demand Method

1. Calculate usable forage
2. Adjust for terrain, water, or other constraints
3. Calculate forage demand of animals
4. Calculate stocking rate
Step 1: Calculate Usable Forage

- Determine biomass supply.
  \[\text{Wt of biomass/acre} \times \text{total acres} = \text{total biomass supply}\]

- Convert total biomass to total forage.
  \[\text{Total biomass/acre} \times \text{Proper use} \times \%	ext{ }\times \text{area} = \text{total forage supply}\]

Proper stocking rates are based on maintaining sufficient plant residue for:
- Plant health/regrowth
- Wildlife forage
- Erosion prevention

**Example**: You manage a 1,200 acre ranch and the average production is 500 lbs/acre. The ranch is located in a sagebrush steppe plant community and has a proper use factor of up to 30% of the annual forage. What is your forage supply/year?

\[
\text{______ acre ranch} \times \text{______ lbs/ac} = \text{______ lbs of biomass} \\
\times \text{____ Proper Use Factor} = \text{__________ lbs of forage.}
\]

### Step 2: Adjust for Accessibility

Not all forage is available for grazing.

- How far from water?

- How steep?

### Step 3: Calculate Forage Demand

Body weight \(\times\) ___% eaten/day = amount eaten/day \(\times\) days on range = total amount eaten

**Example**: On average cows in your herd weigh 1,000 lbs and graze on the ranch for 3 months

\[
\text{______ lb cow} \times \text{______ % of body wt/day} = \text{______ lbs forage/day} \\
25 \text{ lbs} \times \text{____ days} = \text{______ lbs/cow/season}.
\]

OR... How many AUMS is this?

\[
\text{______ lbs/cow/season} \div \text{______ lbs /AUM} = \text{_____ AUMs}
\]

### Step 4: Calculate Stocking Rate = Number of animals/area of land/season

**Example**: How many cows should you have in your base herd if your usable forage is ______ lbs/pasture and the forage demand of each cow is ______ lbs?

\[
\text{_______lbs supply} \div \text{_______ lbs demand} = \text{_______ cows} \\
\text{_______AUMs supply} \div \text{_______ AUMs demand} = \text{_______ cow}
\]

**Overgrazing**: repeated heavy grazing that yields damage to the plant community

**Overstocking**: heavy grazing during a specific season such that high levels of utilization are observable.

**Over-resting**: excessive resting (no grazing) periods that results in damage to the plant community.

Set a stocking rate and then MONITOR!