Guidelines for Setting or Calculating a Stocking Rate

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◆ 4-step or Forage Demand Method
  - Calculate usable forage
  - Adjust for accessibility (terrain, water, or other constraints)
  - Calculate forage demand of animals
  - Calculate stocking rate

◆ The forage demand method is used:
  - When you have no stocking information from previous years
  - To estimate carrying capacity in biological surveys or land appraisal
  - When considering changes in kind or class of animals

◆ Step 1 – Calculate Usable Supply
  - If you start with forage production in pounds.
    - Clip small area
    - Use a photoguide
    - Consult NRCS range site guides
  - Wt of biomass/acre× area = total biomass supply
  - Convert total biomass to total forage
    - Not all biomass is forage
    - Not all biomass should be grazed
  - Use a “Proper Use Factor” to calculate forage
    - Total biomass × proper use(%) = total forage supply
    - An Example – You manage a 1,200 acre ranch and the average production is 760 lbs/acre. The ranch is located in the intermountain bunchgrass region and based on this vegetation type, a proper use factor would be to remove up to 40% of annual biomass.
  - What is your usable forage supply?

◆ Step 2 – Adjust for Accessibility
  - Not all forage is available for grazing (Holechek, J.L. 1088. An approach for setting the stocking rate. Rangelands 10:10-14)
    - Distance from Water
      - Calculate acres of pasture that are 1-2 miles or greater than 2 miles from water.
    - Reduce usable forage allowance. For example, for British cattle breeds:
      - No reduction for land within 1 mile of water
      - 50% reduction for land 1-2 miles from water
      - Consider land > 2 miles from water, unusable
    - Slope or Rough Terrain
      - Calculate acres that are 11-30, 31-60 or >60% slope
      - Reduce usable forage allowance. For example, for British cattle breeds:
        o No reduction for slopes < 10%
        o 30% reduction for slopes 11-30%
        o 60% reduction for slopes 31-60%
        o Consider slopes > 60%, unusable
Adjustments for slope and distance from water are **guidelines** not **rules**. Depends on:

- ____________________________
- ____________________________
- ____________________________

**Step 3 - Calculate Forage Demand of Animals**

- Estimated on the weight of animals
  - Ruminants eat about 2.5% of their body weight per day on rangeland or pastures
  - Horses eat about 3% of their body weight per day on rangeland or pastures
- If you know number of animal and how many days they graze on the range, the total demand per season or year can be estimated.
- *For example* – you manage a herd of cows with an average weight of 1,200 pounds and they graze on the ranch for 3 months (or 90 days).
  - How much air-dry forage would you expect them to eat?

- Demand can be expressed in AUMS
  - AUM = **750 lbs** which is **1,000 lbs grazing ruminant**
  - AUE = Animal Unit Equivalent = the relationship between the number of actual animals in an animal Unit
  - Number of Animals × the AUE for that species and type = AUs
    - 6 bulls × 1.35 = _____ AU
    - 270 goats × 0.15 AUE = _____ AU
    - 100 elk × 0.6 AUE = _____ AU
- Calculate number of AUs:
  - Number of animals × AUE = AU
  - AU × number of months grazing = AUMs
- *For Example* - 15 horses that graze for 6 months:
  - 15 horse × 1.25 AUE × 6 months = _____ AUMs
  - Express in pounds?

**Step 4 - Calculate Stocking Rate**

A stocking rate must include:

- ____________________________
- ____________________________
- ____________________________

The following are stocking rates because they include all 3 of the necessary elements:

- 2.5 Ac/AUM or .75 AUM/Ac
- 15 cows/35 acre pasture/4 months
- Flock of 450 ewes and lambs on ranch for a year
Variable/Flexible vs Fixed Stocking -- Amount of forage varies from year to year

- **Flexible** = no more than 60% of herd in breeding stock. Meet shortfalls or excessive forage by:
  1. 
  2. 
  3. 
  4. 
- **Constant** = herd size that could be sustained if rainfall was 25% below average

Establish stocking rate based on:
- Past experience
- Current situation
- Long-range weather forecast
- Financial goals
- Etc.

**Set a Stocking Rate and Then Monitor!**

- With this method stocking rate is determined by trial and error over years and then monitored by:
  - **Range Trend** = changes in plant composition or rangeland health over time

- **Key Species** = a species that indicates use of associated species
  - __________
  - __________
  - _________________
  - _________________

- **Key Area** = portion of range which because of location, vegetation community or topography is used as an indicator of the whole pasture.
  - _________________
  - _________________
  - _________________
  - _________________

**Grazing Capacity Summary**

- Use caution when estimating grazing capacity
- Combine
  - _________________
  - _________________
  - _________________
  - _________________
- Monitor!
- Adjust as needed