

## Determining Degree of Use Range and Pasture Jobsheet 25

This jobsheet documents the method to use for determining proper grazing use on Rangeland, Native Pasture, and Grazed Forest. The main purpose for estimating degree of use is to determine if a management unit is being properly grazed or if changes in grazing management or stocking rate are needed.

The Prescribed Grazing Practice Narrative contained in the Conservation Plan of Operations should identify the grass or browse species being managed for and the maximum acceptable degree of use for the species. If the degree of use exceeds the limits set forth in the Prescribed Grazing Specifications (528), appropriate adjustments should be made.

### Method description and documentation

This method involves the selection of “key grazing areas” and “key species” within each pasture or management unit. Within the key grazing areas, transects are established. On the transects both grazed and ungrazed plants of the key species are clipped and weighed to determine degree of use.

The calculations on the following example (page 4) describe how to determine degree of use percentage. This percentage should be documented on the NRCS-RANGE 414 form, *Proper Grazing Use* (Page 5). Directions on how to fill this form out can be found in the National Range and Pasture Handbook, Exhibit 4-3.

There is no need to clip and weigh key species to determine degree of use if a pasture is ungrazed or is obviously not overgrazed. In other situations, individuals experienced in estimating forage utilization can usually estimate utilization with a fair degree of accuracy using ocular estimates only. If ocular estimates are being made, consider demonstrating accuracy by clipping on a few management units.

When management units are dominated by plant species, such as common bermudagrass, bahiagrass, or carpetgrass proper grazing use should be documented using Range and Pasture Jobsheet 23: *Determining Pasture Utilization Using Average Stubble Heights*.

### Selecting key grazing areas

In many cases management units have certain characteristics that influence grazing distribution, size, topography, water location, natural barriers, etc. For these reasons it is impractical to assume that grazing use will be similar in all areas of a large management unit. Identifying a key grazing area in each management unit or portions of a management unit is more practical. Key grazing areas are relatively small areas within the grazing unit and are used to represent the grazing unit as a whole. If key grazing areas are properly grazed, the unit as a whole will not be excessively used.



Key grazing areas should be selected only after careful evaluation of the current pattern of grazing use and changed when the pattern of grazing is significantly modified. The following criteria should be used to select key grazing areas:

- Provides a significant amount, but not necessarily the majority of the forage in a management unit.
- Has the potential to be overgrazed first because of topography, water accessibility, canopy condition, and/or other factors affecting grazing distribution.
- Small areas such as salt or feeding areas, or water facilities are not key grazing areas.
- Usually limited to one per management unit, but more may be needed for unusually large units, for different kinds of animals (grazing vs browsing), or for units with widely spaced water where animals tend congregate.
- The entire acreage of small management units may be considered the key grazing area.
- Key grazing areas may be sensitive areas such as riparian areas or specialized wildlife habitat.
- Areas where seeding, brush management, prescribed burning, mowing, etc. have been done will become the key grazing area.

Deviations from these criteria can be made depending on the condition of untreated areas, and the scope in size of the treated areas.

### Selecting key species

Most plant communities in a grazing unit consist of multiple plant species. While the entire plant community is of concern to management, it is impractical to attempt to attain the desired use of every species. It is more practical to identify a single (or possibly 2 or 3) species to serve as a guide to evaluate the use of the entire plant community. If the key species is properly grazed the entire plant community will not be excessively grazed. The following factors should be used when selecting key species:

- A key species should have a relatively high grazing preference compared to other plants in the area.
- The key species should as a minimum make up 15% by weight of the forage in the key area.
- Normally only one key species per key grazing area will be needed, however, when a management unit is used by more than one kind of grazing animal, such as cattle or deer, a key species will be established for each, if grazing pressure dictates.
- The grazing manager's objectives for the site (ex. grass species or browse species) affect the key species being managed as long as there is enough plant residue to prevent significant soil erosion.
- The key species may need to be changed based on seasonal preferences by the grazing animals and/or successional changes in the plant community.

### Sampling process

1. Obtain two grocery sacks; label one "grazed" and the other "ungrazed".
2. Establish a transect traversing the key grazing area.
3. Whenever a key species is encountered along the transect, clip the entire plant at ground level. Try to clip only those plants that are close to the same stage of maturity.
4. Place the plants, ungrazed or grazed, into the appropriate sack and mark a tally on the sack or other sheet. Continue clipping plants along the transect until there are at least 15 plants in each of the grazed and ungrazed sacks. Extend the transect as necessary to satisfy the minimum quota of plants.
5. Count the number of grazed and ungrazed plants that were clipped.
6. Separate out current year's growth from previous year's residue then weigh each sack separately to determine the weights of current growth for grazed and ungrazed plants.
7. Record the numbers and weights on the Actual Weight Form. **Percent utilization should be estimated on a minimum of 5 transects.**
8. Average the percent utilization values from the 5 transects to determine overall percent utilization.
9. If enough ungrazed plants cannot be found, clip ungrazed plants from an adjoining area, or an adjacent ungrazed area. These sites must be as similar as possible (vegetation and soils) to the area being evaluated.

### Timing of sampling

- For management units grazed on a continuous year-long basis, make assessments shortly before the beginning of a new growing season.
- For management units that are seasonally grazed or are in a decision deferment system, make assessments at or near the end of the planned grazing period. This may coincide with the end of the growing season.
- For management units that are part of a rotational system, assessments should be made at or near the end of the planned grazing period of each management unit. In a more intensive rotational system, when management units

are grazed more than once a year, make the assessment near the end of the last grazing period prior to the beginning of a new growing season.

### Final considerations

The existing plant community in a pasture is the result of its past use and management. The following characteristics may be used to develop an idea of the type of use the site has received in the past. While, these characteristics can not be used to estimate current utilization, they can provide information related to future management considerations.

A high prevalence of plants that are preferred by livestock in a management unit is an indicator that a pasture has not been over utilized; conversely a high proportion of weeds, brush, or plants that livestock do not normally utilize can be an indicator of overgrazing. However, other events such as severe or prolonged drought, abnormally high precipitation, exotic species invasion, or unnatural burning frequencies can also cause species composition to change.

Signs of successful reproduction of desirable plant species may indicate that a site is not being over utilized. This includes the presence of seedlings or young plants or the presence of mature plants with seedheads. Because reproduction is often largely vegetative in some plants, the absence of seedlings or young plants is not necessarily an indicator of overgrazing. Likewise seedling recruitment is also affected by weather extremes that prohibit germination.

For browse plants, the presence of hedging on short shrubs or browse lines on tall plants indicates that the shrubs or trees have been subjected to long-term heavy use.

The soil surface may also provide clues as to past use. These characteristics generally indicate an increased potential for soil erosion that could be attributed to over utilization. Some of these characteristics include: an abundance of rills or other water flow patterns, the presence of debris dams, and the amount of bare soil or lack of plant litter covering the soil. As with the previous characteristics, the presence of these characteristics does not necessarily indicate the pasture has been over utilized. Soil movement is a natural ecological process. It only becomes a problem when the pasture or management unit no longer has the capacity to support the plant communities that are desired and productive to the land owner.

### References:

Bureau of Land Management. 1999. Interagency Technical Reference: Utilization Studies and Residual Measurements. BLM Rpt No. BLM/RS/ST-96/004+1730. Technical Reference 1734-3. 176 pages.

USDA/NRCS. 1997. National Range and Pasture Handbook.

### Actual Weight

Ranch/Farm	Date	Examiner
Land Manager/Owner		Pasture/Key Grazing Area
Kind/class of animal		Period of Use

Key species			See jobsheet for explanation of the steps for calculating percent utilization		
Plants	Number of plants	Total weight* (grams)	Step 1	_____ =	Grams/ungrazed plant
Grazed			Step 2	x =	Grams (weight of all plants as if none had been grazed)
Ungrazed			Step 3	_____ x 100 =	% of weight remaining
Total			Step 4	100 - =	% utilization

Notes (use other side or another page if necessary)

Key species			See jobsheet for explanation of the steps for calculating percent utilization		
Plants	Number of plants	Total weight* (grams)	Step 1	_____ =	Grams/ungrazed plant
Grazed			Step 2	x =	Grams (weight of all plants as if none had been grazed)
Ungrazed			Step 3	_____ x 100 =	% of weight remaining
Total			Step 4	100 - =	% utilization

Notes (use other side or another page if necessary)

Key species			See jobsheet for explanation of the steps for calculating percent utilization		
Plants	Number of plants	Total weight* (grams)	Step 1	_____ =	Grams/ungrazed plant
Grazed			Step 2	x =	Grams (weight of all plants as if none had been grazed)
Ungrazed			Step 3	_____ x 100 =	% of weight remaining
Total			Step 4	100 - =	% utilization

Notes (use other side or another page if necessary)

\*Minus the weight of the sack

### Actual Weight

Ranch/Farm <i>Sandy Hill Ranch</i>		Date <i>9/15/2003</i>	Examiner <i>G.H. Ruth</i>
Land Manager/Owner <i>C.P. Theriot</i>		Pasture/Key grazing area <i>Muir pasture/lowland east of drainage</i>	
Kind/class of animal <i>Cattle</i>		Period of Use <i>5/15 – 10/15</i>	
Key species <i>ANGE</i>		See jobsheet for explanation of the steps for calculating percent utilization	
Plants	Number of plants	Total weight* (grams)	Step 1 $\frac{142}{17} = 8.4$ Grams/ungrazed plant
Grazed	43	154	Step 2 $60 \times 8.4 = 504$ Grams (weight of all plants as if none had been grazed)
Ungrazed	17	142	Step 3 $\frac{296}{504} \times 100 = 59$ % of weight remaining
Total	60	296	Step 4 $100 - 59 = 41$ % utilization
Notes (use other side or another page if necessary)			
*Minus the weight of the sack			

#### Formulas for the calculations shown above

- Calculate the average weight of ungrazed plants.

$$\frac{\text{Total wt. of ungrazed plants}}{\text{Total no. of ungrazed plants}} = \text{Avg. wt. of ungrazed plants}$$

- Calculate the total weight of all clipped plants as if none had been grazed.

$$\frac{\text{Total no. of plants clipped}}{\text{(grazed + ungrazed)}} \times \frac{\text{Avg. wt. of ungrazed plants}}{\text{(from step 1)}} = \text{Total ungrazed wt. of clipped plants}$$

- Calculate the percent of total production remaining.

$$\frac{\frac{\text{Total wt. of clipped plants}}{\text{(grazed + ungrazed)}}}{\frac{\text{Total ungrazed wt. of all clipped plants}}{\text{(from step 2)}}} \times 100 = \% \text{ of total production remaining}$$

- Calculate percent utilized.

$$100 - \% \text{ of total production remaining} = \% \text{ utilization}$$

(from step 3)

The United States Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs sexual orientation, and marital or familial status. (Not all prohibited bases apply to all programs). Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact the USDA's TARGET Center at 202-720-2600 (voice and TDD). To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326W, Whitten Building, 14<sup>th</sup> and Independence Ave., SW, Washington, D.C., 20250-9410, or call (202) 720-5964 (voice) or (202) 720-1127 (TDD). USDA is an equal opportunity provider and employer.

### Proper Grazing Use

Cooperator \_\_\_\_\_

Grazing unit	Acres	Species of grazing animal	Season of Use	Location of Key Grazing Area	Key Plant(s) for Judging Proper Grazing Use	Minimum Percent of Key Species at End of Grazing Period (or Pounds per Acre)	Actual percent or pounds remaining				
							19__	19__	19__	19__	19__
Conservationist Assisting with Planning						Initials of Conservationist Assisting with Application					
Name and Date _____							Dates of Application Checks				