

RESEARCH NOTES

SOUTHWESTERN FOREST AND RANGE EXPERIMENT STATION^{1/}
Arthur Upson, Director

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TENTATIVE RANGE UTILIZATION STANDARDS

Black Grama (Bouteloua eriopoda)

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Refer to Research Note 25 of the Southwestern Forest and Range Experiment Station which presents the fundamental concepts underlying tentative range utilization standards.

Black grama (G28)^{3/} is an important forage grass on many southwestern semidesert and shortgrass ranges. In association with tobosa (Hilaria mutica) (G71) it is the dominant type over several million acres in southern New Mexico, western Texas, southeastern Arizona, and along the Rio Grande to Albuquerque. Black grama is also abundant in portions of central Arizona and in the shortgrass country of eastern New Mexico. It now occurs, or has occurred in the past, in important quantities on the Cibola, Coconino, Coronado, Crook, Gila, Lincoln, Prescott, and Tonto national forests in the Southwest.

Soil

Soil is the basic resource and soil conservation is a prime objective of utilization standards. Proper use of black grama, as indicated by the standards, will in most instances prevent accelerated wind or water erosion due to trampling and overgrazing and will build up and maintain soil productivity. But in the unusual case where application of the standards does not result in proper soil management, forage utilization should be made progressively lighter until soil conditions become satisfactory.

Utilization Indicator

On the ranges where it occurs, actually or potentially, black grama is a utilization indicator plant. When use is proper on black grama, use of the range as a whole may be considered proper. Associated species may be grazed as much as possible provided grama is not overused. When black

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^{3/}Symbols refer to species write-up pages in the Range Plant Handbook.

grama occurs in association with some other utilization indicator plant such as blue grama, and both species are important items in the forage composition, the range as a whole is properly used as soon as either one of the indicator plants is properly used, regardless of the degree of use on the other indicator plant.

Guides to Proper Use

1. On ranges in good condition, proper use at the end of the grazing season, which is in the late spring on yearlong or winter seasonal ranges and in the fall on summer seasonal ranges, means that the grazed stubble should be cropped not closer than 2 or 3 inches above the ground. In addition, 25 percent of the flower stalks and most of the stolons should be ungrazed. A few tufts are sometimes grazed to within 1 inch of the ground, while others are utilized to within only 4 or 5 inches of the ground. Leaving stolons is extremely important for it is primarily by stolons and tillering rather than by seed that black grama revegetates. Stolons and sets are also very important in controlling erosion from both wind and water.

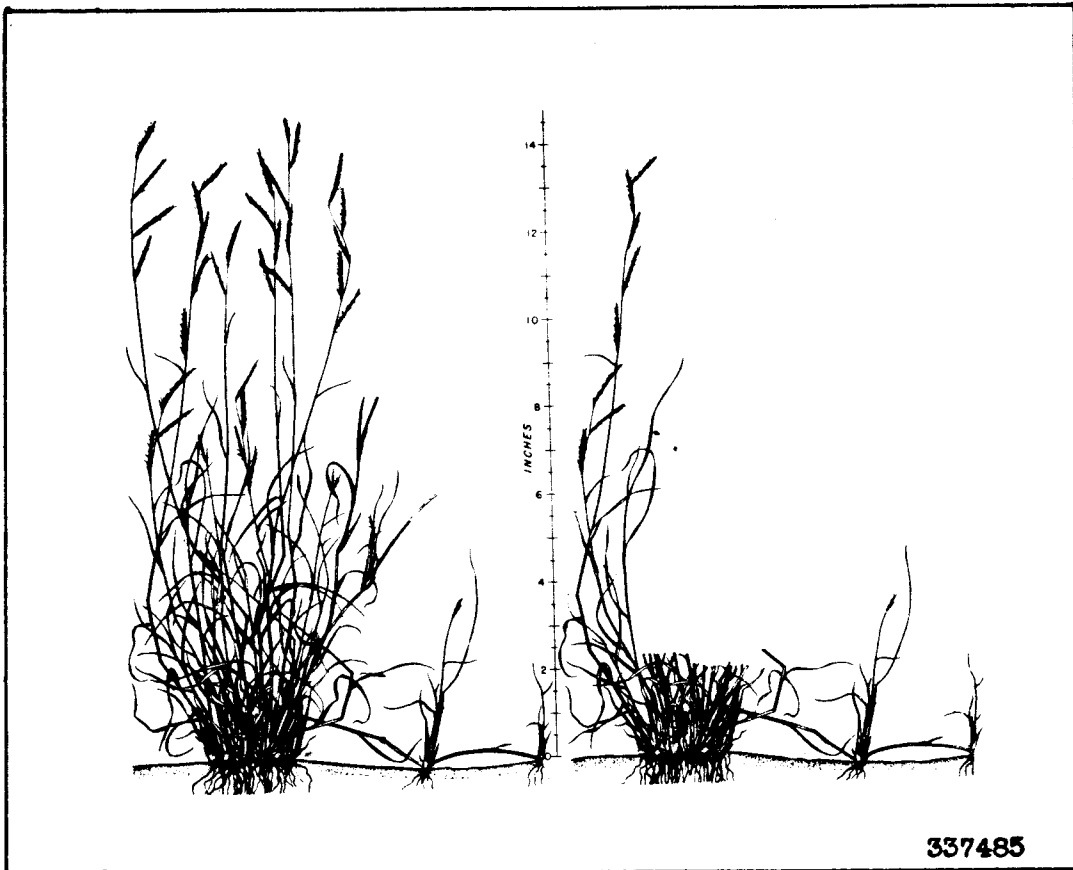


Figure 1.—Ungrazed black grama on the left; properly grazed on the right. On the grazed clump, the stolons and 25 percent of the flower stalks are not eaten, and the stubble is cropped not closer than 2 inches above the ground. An important method of spreading is by means of the runners or stolons growing out from the parent plant which root at the joints and send up new shoots or sets that later become separate plants.

2. At the end of the grazing season on a properly-used non-deteriorated range, observers usually estimate that 70 or 80 percent of the current forage growth has been taken. On the basis of weight, this figure represents about 50 percent of the entire plant above ground.

3. Proper use at any time prior to the end of the grazing season is roughly proportional to the length of season remaining. Thus if 50 percent of the volume by weight should be taken by the end of the season, only 25 percent should be taken when the season is half over. This would be equivalent to leaving about half the flower stalks and all the stolons untouched with the grazed portions of the tufts cropped not closer than 3 or 4 inches above the ground.

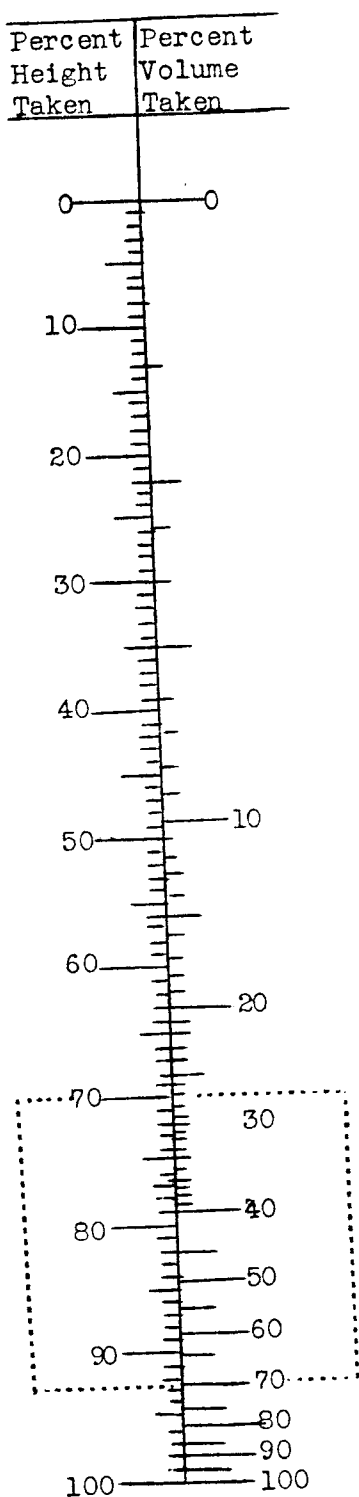
4. On yearlong non-deteriorated range, not over 12 to 15 percent of the herbage volume by weight should be grazed by the end of the summer growth period. Utilization to this degree is so light that it is hard to see, and close range inspection is needed to detect it.

5. On deteriorated ranges, where black grama formerly dominated and which may now be three-awn, snakeweed, creosotebush, or other types, use of the grama should be more conservative than specified above in order to give the grass a better chance to revegetate and control erosion. Possibly about 35 percent of the volume by weight should be taken by the end of the grazing season. This would be attained by leaving approximately 35 to 40 percent of the flower stalks and nearly all the stolons uneaten, with the grazed portions of the tufts cropped not closer than 3 or 4 inches above the ground. The relatively unpalatable associated species, such as the three-awns, may be grazed lightly provided black grama revegetation is not retarded.

6. A safety margin is needed for black grama to counteract the effects of periodic droughts which occur on the average in the Southwest one year out of every five and which alone may reduce the grama stand 90 percent. It is advisable to leave a 15 to 25 percent drought reserve of unused grazing capacity in the average year in order to avoid death losses and range depletion in dry years.

7. The utilization chart on the following page offers a simple field method of determining the percentage of volume utilization. This can then be checked against the proper use percentages given in the preceding paragraphs in order to learn whether utilization is too much, too little, or proper.

Utilization Chart



The adjoining line-chart for black grama relates the height of the grass to the volume of forage, and makes it possible by simple height measurements to determine with relative accuracy the volume of forage utilized. The dotted line blocks out the zone within which proper use occurs. Note the concentration of volume close to the ground.

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To use the chart the following four steps are necessary:

A. Determine the average height of the tallest flower stalks on a representative number of ungrazed tufts. This should preferably be done on ungrazed range such as gateless areas, allotments receiving non-use, fenced right-of-ways, or protected pastures. Sample Ans.: 25 inches

B. Determine the average height of black grama on a utilized range. This means getting the average height of flower stalks and grazed stubble for a representative number of tufts, both grazed and ungrazed, on a range that has received use. Sample Ans.: 4 inches

C. Compute the percentage height taken by subtracting B from A, dividing by A, and multiplying by 100. Thus:

$$\frac{A - B}{A} \times 100 = \% \text{ height taken. Sample Ans.: (using the results given above):}$$

$$\frac{25 - 4}{25} \times 100 = 84\% \text{ of the height taken.}$$

D. Locate the percent height taken, as computed in step C, in the left column of the line-chart and read the corresponding percent volume taken in the right column of the chart.

Sample Ans.: 84 percent of the height lies opposite 49 percent of the volume. Therefore, 49 percent of the volume by weight of the current herbage growth has been utilized.