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*do you know*

*your* **RANGE ?**



TEXAS AGRICULTURAL EXTENSION SERVICE  
G. G. Gibson, Director, College Station, Texas

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*As a stockman and land user, you have a big stake in the future of livestock production and range soil conservation. Nothing conserves soil and water on a watershed like a good cover of native grass. Grass is a product which is harvested and marketed as meat, wool, mohair and wildlife.*

*When you market animals you are paid for the number of pounds rather than the number of head you sell. By practicing good range management, you can produce higher quality livestock products at less cost, returning more money per dollar invested and for a longer period of time.*

# A C K N O W L E D G M E N T S

This bulletin attempts to give a better understanding of range management. It is designed as a guide toward a more uniform method of teaching range management practices.

The advice, consultations and suggestions of members of the Department of Range and Forestry, Texas Agricultural Experiment Station and Texas Agricultural Extension Service personnel are greatly appreciated.



# do you know your RANGE?

GARLYN O. HOFFMAN, *Range Specialist*  
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**R**ANGELAND MAKES UP ABOUT TWO-THIRDS of the 169 million acres in Texas. Range is land generally unsuitable for cultivation and covered with native vegetation. Old cultivated fields that have been abandoned because of low production also are classed as rangeland. A large percentage of the agricultural income and food of Texas is derived from products produced by the 15 million grazing animals. Wildlife adds additional income and pleasure for many people. Thus, rangeland is an economically important natural resource in Texas.

This publication explains the practices taught in range judging and outlines the contest itself.

## How the Grass Plant Manufactures Food

A grass plant can be regarded as an automatically powered food manufacturer. Its fuel for power comes from water, air, soil, minerals and sunlight. It breathes in carbon dioxide and water and exhales oxygen and water. Animals and humans must have oxygen and water to live. When the grass plant is grazed, part of the machine is stopped temporarily since there is not enough green leaf surface to use the fuel properly. If allowed to grow for a short while the entire manufacturing machine will begin operating again.

Grasses differ from trees in the growth of new leaves and stems. When a grass plant is grazed off it will grow another top from the remaining part of the stem or leaf, but when a tree top is cut off it does not grow another top from the same stem. The growing point of a grass leaf is at the base while the growing point of a tree leaf is at the tip.

## What Range Judging Is

Range judging is a contest that offers a practical way to learn good range management. It can teach the ranchman how to determine the condition of various native grassland pastures and how to manage them. It points up why we need to manage properly one of our most valuable natural resources—grass. Through range judging the importance of na-

tive grasses and plants can be better understood.

The range judging contest tests the range management skills and knowledge of men, women, boys and girls. Any person can participate.

## Why Have Range Judging

Through range judging, the contestant becomes familiar with grasses, weeds, trees, soils and the reactions of grazing animals on native grassland. Each person learns the differences in plants, how grazing affects plant growth, what kinds of plants grow on different soils, kinds of plants that are necessary for different range conditions and the management that will improve each range.

Range judging can be practiced all over the State. In West Texas the land user manages for highest grass production; while in East Texas, highest production and greatest income is derived from multiple use—grazing and timber. In different areas of the State the grazing periods have to be adjusted to the growth stage of native vegetation. Unless all these points for the local area are known, one cannot obtain good range management.

## Planning the Contest

Much information about good range management can be disseminated at range judging field days and contests. Careful planning and organization prior to the contest is essential to its success. The county agent should take the lead in planning. A representative of each agricultural agency within the county should comprise the range judging committee.

The duties of the range judging committee are:

1. Select a suitable place to conduct the field day or judging activities.
2. Select the most important plants in the area for plant identification. If possible, the plants should correspond to the groups of plants on D-387.
3. Stake and number the 20 plants to be identified.

4. Stake, number, rope off and dig the hole for part II. A plot 25 feet or more square is large enough for most range sites. A hole should be dug just inside the boundary of the plot to check the depth of soil and determine the kind of site.
5. Stake and number four plots to be judged. Contestants will place these plots as if judging a class of livestock at a show.
6. Determine correct answers for all parts of the contest. Each part of the contest is discussed fully in this publication.
7. Select appropriate awards for the winners.
8. Have D-387 score cards and pencils ready for contestants.
9. Arrange for a public address system if group is to be large.
10. Locate parking area away from contest area.
11. Make water and cups available.
12. Station an instructor at each part to assist the contestants.
13. Grade score sheets and determine the winner. In case of ties, judges' decision will be final.
14. Instructors stationed at each part should discuss thoroughly the correct placing for each phase of the contest. By reviewing the placings, the contestants will understand why particular placings were made.
15. Present awards.
16. Publicize the event well ahead of time to obtain a large number of participants.

## Training the Contestants

Range judging is successful only when the contestant has learned to identify and classify range plants as to the kind of grasses, forbs, brush and trees and the grazing value of each. Plant identification is basic for good range management. The contestant will not understand fully the steps in comparing the different ranges if he does not know plants.

The county agricultural agent and the adult leader should meet to discuss what is involved in range judging. Slide Set No. 341, *Range Judging*, can be used for a detailed discussion of the contest. The county agent and adult leader should begin the range judging instructions on plant identification and classification with plant mounts; then progress to the other parts as the contestants become ready. Slide Set No. 284, *Grass—Texas' Greatest Crop*,

can be used for identification of grasses. Each contestant should make a collection of plants listed in Part I of D-387 to study.

After the 4-H members have learned to identify the plant mounts, the agent or leader should take them to the field for practice and testing with live plants. Show the members how the plants should be staked, and thereafter, let them do the staking and numbering. The members should set up each phase of the contest after having been shown. *Work with only one part of the contest at a time until the contestants are thoroughly familiar with that part before moving on to the next one.* By helping to set up each part, a member can go home and set up the same part on different soil sites and range conditions for his own study. He can take time to analyze and decide just what the correct answer should be.

It takes hard practice and long study to be a good judge of ranges. The knowledge of range management received by a contestant will pay big dividends when he is ready to operate his own ranch. It also prepares individuals for further training in other range management phases, such as teaching, research, extension, technical service, national park rangers, forestry and private industry.

## Part I. Plant Identification

A knowledge of plants is basic for range judging.

Part I is composed of 100 plants of which 20 will be staked and numbered for identification on the contest. Native plants growing in the area should be used. Transplanted specimens can be used if they are not wilted.

This is a multiple-choice test; page 10 is an example. The contestant selects the name of the plant by making an "X" opposite the correct name within the group. For example:



*This photo shows how Part I should be staked.*



the contestant would "X" 12C, indicating that bush muhly was in group 12 and No. C within the group. Each plant in a group is distinguished by letters A, B, C, D, E, F. Line "F" is left blank for the plant name to be written in by the contestant. *Do not have too many "F's"—the maximum is five.*

Part I can be graded on the basis of 100 points for a perfect score. Deduct 5 points for each plant that is not identified correctly.

When plants are staked to be identified, place the plant on the same side of the stake as the number. Remove the plant material that could be confused with the plant to be identified. The contestants should not handle the plants to determine identification. Identifying characteristics can be broken off easily when the plants are touched. Each contestant should have even competition on all parts of the contest.

## Part II. Range Condition Classification and Treatment

Part II is composed of four sections: *degree of utilization; kind of site; range condition; and recommended treatment.* An area 25 to 50 feet square should be roped off to conduct Part II. The more sparse the vegetation, the larger the area required.

Part II should be scored as 100 points. This can be broken down into the following: degree of use, 30 points; kind of site, 20 points; range condition, 25 points; and recommended treatment, 25 points. An example of Part II is on page 11. Each division is explained separately.

### DEGREE OF UTILIZATION

Degree of utilization means the amount of forage removed from a plant or pasture by grazing animals. Normally it is expressed as the percentage of the plant's weight that is removed. There are five degrees of use that each contestant will consider during the judging. After complete examination of Part II, the contestant will decide and mark an "X" in the block that denotes the degree of use. The photograph at the top of page 6 and a description of each degree explains this section in detail.

**UNUSED** means no signs of grazing. All plants appear undisturbed. This kind of use is not a good conservation practice since too much good forage is going to waste.

**LIGHT USE** means only the best or climax plants are grazed. Under good range conditions light use normally produces the heaviest individual animal weights but a low-per-acre



*Here is a plot layout. Note the position where the test hole is being dug for determining the kind of site.*

gain. Light use is not the most economical, as all the available forage is not being used. With fair-condition ranges, light use is recommended for recovery to a higher condition.

**PROPER USE** indicates that all of the available range grass forage is being grazed. The primary forage species are utilized properly. The primary forage species are the climax and most productive and palatable plants for the area. Proper use insures maximum production and soil protection. Proper use for most grasses is using half and leaving half of the current year's growth by weight. This can be determined by clipping and weighing or by measuring the stubble height of various grasses. Unlike a machine, animals do not consume each plant to a given height. So at the end of the growing season, a properly grazed pasture will have a patchy, uneven stubble. A smooth, mowed appearance of the pasture usually indicates overgrazing.

To determine the proper grazing height and the amount of stubble height to leave on the ground, follow these steps:

1. Wrap mature ungrazed plant with string.
2. Cut off plant at crown—ground level.
3. Place wrapped plant across index finger. When plant balances, measure with a ruler from the bottom of the plant to point of balance. This is the proper stubble height to leave.
4. Cut off the plant at point of balance and weigh both parts to determine if measured height is correct. Each part should weigh the same. The average stubble heights (50 percent forage removed) for the various grasses are:



Degrees of utilization of a grass plant, left to right: unused, light, proper, severe, destructive.

- (a) Tall bunchgrass — bluestems, Indian-grass — 6 to 8 inches.
- (b) Mid bunchgrass — gramas, winter grasses—3 to 5 inches.
- (c) Sod grasses — buffalo, curlymesquite, blue grama—1 to 1½ inches.

**SEVERE USE** is when almost all of the primary forage plants are used. The low-value plants are carrying the grazing load. The pasture shows signs of trampling, trailing and erosion with shrubs appearing as if they had been trimmed. The plants have an even, mowed appearance. The soil becomes hard and packed with annual grasses and weeds filling in the blank spaces between the closely grazed perennial grass clumps. This kind of grazing usually produces rather good per acre gains for a few years, but individual animal weights are low. This is not economical range management as no vegetation is on the ground for winter use and for conserving rainfall.

**DESTRUCTIVE USE** means that the primary forage species are almost dead. Only remnants of good plants are surviving. Annual grasses and weeds are carrying the grazing load. The appearance of the pasture approaches that of a corral. This kind of grazing is uneconomical for production and conservation. Much erosion from water and wind takes place. Animals have to be given hay and protein throughout the year. The calf crop is usually low with low calf gains and weights.

#### KIND OF SITE

Kind of site means the kind and depth of soil that is covered with range plants. Depth is used to determine soil site as it is more easily determined than some of the other soil site differences. Site classification can very easily be associated with forage production. The fol-

lowing four kinds of sites are used for simplicity:

1. **BOTTOMLAND SITE** is usually clay soil that is nearly level, fertile and over 20 inches to rock or parent material.
2. **ORDINARY UPLAND SITE** usually consists of clay-loam soils that are 10 to 20 inches to parent material. This site is rather rolling in appearance.
3. **HILLS, RIDGES AND SHALLOW SOIL SITES** are soils that are less than 10 inches deep to parent material. This type of site is rather rough with steep ridges or canyon areas.
4. **SANDY SITES** are sandy lands over 20 inches deep.

#### RANGE CONDITION

Range condition is the stage of health or productivity for both soil and forage on a given range. To recognize range condition class for an area, the contestant needs to know what kind of vegetation the area will support under normal climatic and proper grazing conditions. Range condition can be expressed as the stage of plant development for a given area. The number of climax plants on an area will indicate its range condition. Plant composition is the most important indicator of range conditions. The higher the range condition class for a given area, normally the higher will be the carrying capacity. A pasture covered with good range plants usually produces three times more livestock products than a pasture covered with poor grasses.

Range condition class is based upon climax plants. If you do not know the climax plants for your area, look for a relic area. A relic



An adult leader discusses range condition by pointing out some climax plants.



area is any place that has not been disturbed by grazing, fire or other factors introduced by man. The other classes of plants besides climax are secondary and poor plants. *Climax plants* are commonly called *desirables*, and are the most palatable and productive plants that grow within the soil and climate conditions of an area. *Secondary plants* are good plants but they come into an area as the climax plants are grazed out or the climate or soil changes and are called *less desirables*. *Poor plants* are annuals and weak perennials that furnish little forage. They come in following heavy grazing and drouth. These plants are called *undesirables*.

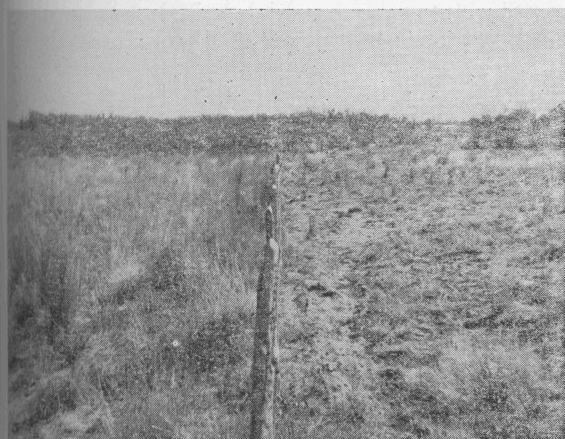
**Classes of Range Condition.** The four classes of range condition are based upon the percentage of climax plants on the area.

1. **EXCELLENT** where 75 to 100 percent of the vegetation is a mixture of highly palatable and desirable climax perennial plants.
2. **GOOD** where 50 to 75 percent of all the vegetation is a mixture of highly palatable climax perennial plants.
3. **FAIR** where 25 to 50 percent of all the vegetation is made of highly palatable climax perennial plants.
4. **POOR** where 0 to 25 percent of all the vegetation is composed of highly palatable climax perennial plants.

#### RECOMMENDED TREATMENT

Recommended treatment includes 16 practices that help the contestant to decide which practice to check that would make the range better. At the Part II station, the contestants will be told the number of practices to check.

1. **DEFERRED GRAZING** is one of the most important practices for range recovery



A deferred pasture appears on the left; a continuously grazed pasture on the right. Grass needs a chance to grow.

throughout Texas. Many times the fastest recovery is made by a combination of deferred grazing, brush control and a change in type or combination of livestock. Any time 15 percent of the climax grasses are growing on an area, reseeding is not advisable as deferred grazing obtains range recovery much more economically and faster. In most cases deferred grazing would not be practiced prior to brush control unless the area was void of forage plants. If less than 15 percent of the vegetation is climax forage plants, reseeding should be done when the brush control method is applied. In most cases a deferred pasture could be grazed moderately during the first winter to use excess forage and to prepare a seedbed by trampling. When an area is not grazed for a long period, the soil surface becomes loose and puffy. Grass seedlings have a hard time becoming established in a loose soil. A small amount of trampling by livestock will firm and prepare a better seedbed. When deferred grazing is practiced during the growing season the plants become more vigorous and develop larger and deeper root systems. If a seed source is lacking in the pasture, defer grazing during the fall as grasses produce the most viable seed at that time. In West Texas, defer after rains since grasses make rapid growth for a few weeks following the added moisture. A deferred-rotation grazing system can aid greatly in livestock production and range recovery in most areas of Texas. Some definitions of grazing systems follow:

*Deferred grazing* generally means waiting to graze an area until the most important forage plants have made seed. While grasses are producing seed, the root system is growing and the plant is becoming more vigorous for greater forage production.

*Deferred-rotation grazing* means that grazing is deferred on various pastures while livestock are grazed in other pastures. After the deferment period, the first deferred pasture is grazed while another pasture is deferred. See extension publication MP-142, *Deferred and Rotation Grazing*, for further discussion of this system.

2. **PROTECTION FROM BURNING** of ranges is necessary in most areas of Texas. The East Texas forested areas are the only sections where burning of native range is a benefit. Burning has to take place at the proper time with ideal weather conditions and proper supervision for satisfactory results.
3. **CONTROL NOXIOUS WEEDS** any time the infestation is bad enough to cause live-

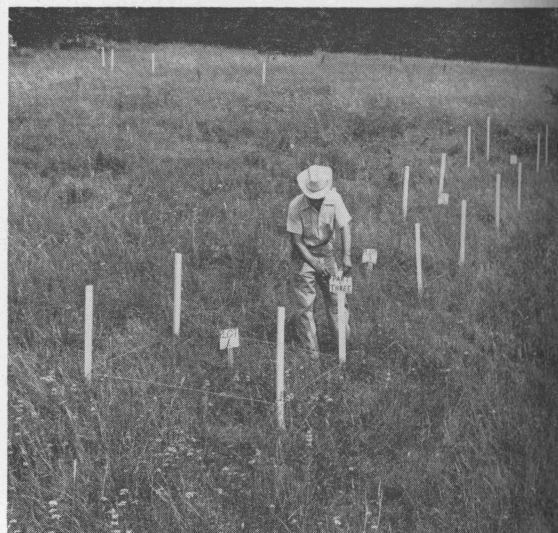
stock injury or reduce forage production. Normally noxious weeds are nonpalatable and do not add to the total forage production for a pasture. As a general rule, very few weeds are eaten by livestock if more desirable forage is available.

4. **SALT AND WATER CAN BE USED** most satisfactorily to obtain more uniform grazing of livestock. Watering places should be about 1 mile apart. Salt should be placed  $\frac{1}{2}$  to 1 mile from water, depending upon the roughness of the area. Salt boxes should be located on any unused area of the pasture.
5. **BRUSH CONTROL** should be practiced when the brush density interferes with forage production and working of livestock. It is not advisable to destroy all the brush since it serves as a good protection for beneficial wildlife. Some types of brush make good livestock feed and it is desirable to have variety in the diet.
6. **LIVESTOCK NUMBERS SHOULD BE INCREASED** when forage is abundant and reduced when the forage is scarce. Livestock numbers should be flexible so there always will be a forage supply on the ground at all times. If a pasture is covered with grass and some brush, cattle and goats could be run on it for greatest utilization. In other situations cattle, sheep and goats could be used. In some situations the class of livestock might be changed altogether; namely, from cattle to goats or sheep.

## Part III. Range Placings

You need a good knowledge of range management before making close comparisons of range plots as is required in Part III. An example of Part III is on page 12. The four range plots are placed just exactly like placing a class of livestock at a stock show. The plot should be from 6 to 9 feet square and all plots should be on the same soil site. Each plot should be numbered. Each plot can be of different or of the same range conditions, depending upon how difficult you want the class. There are 17 reasons to compare the three pairs to determine which pair is the better. All you do is check the reasons that best describe the pair of plots being placed.

The judging committee will number the plots 1-2-3-4 and determine the number of reasons to be checked for each pair. The instructor stationed at Part III will tell the contestants the number of reasons to check for each pair. Part III should be scored as 100 points—50 points for plot placing and approximately 50 points for reasons. If the judging commit-



*Layout of Part III with plot numbers.*

tee has decided that the number of reasons should be 17—6 for the top pair, 6 for the middle pair and 5 for the bottom pair—then 3 points could be given for each correct reason for each pair, making a total of 101 points for Part III.

The best way to make a good score on Part III is to study each individual plot to determine its good and bad points. Then study the next and so on until you have all four plots well in mind. Use the 17 reasons to analyze each plot. After you have the makeup of each plot in mind, decide which two plots should be the top pair. Then check the reasons why plot placed No. 1 is better than the No. 2 plot. This is repeated until you have placed and given reasons for each of the three pairs. Be sure and follow the bracket arrows, Part III of D-387, to compare each pair as you have placed them.

The 17 reasons which will help you determine the correct reason to check for each pair follow:

1. **HIGHER PERCENTAGES OF CLIMAX GRASSES** means these for the area that you are judging. Learn your climax grasses.
2. **MORE GROUND COVER** includes all the plant cover within the plot. Ground cover includes both live and dead plant material.
3. **LESS EROSION AND WATER LOSS** is on the area that has the better range and soil condition. With the four plots on the same soil site and the same slope, soil and water loss should be little unless one plot was almost bare of vegetation. It takes about 2,000 pounds of plant material per



acre to keep soil erosion and water loss to a minimum.

4. *MORE PLANT LITTER* means the uppermost layer of organic material on the soil surface that is decomposing. Plant litter is not consumed by livestock and is considered a soil conditioner.
5. *MORE DESIRABLE SEEDLINGS* means seedlings of the better grasses and forage plants. A range that has lots of grass seedlings should be deferred during the spring to give them a chance to develop and establish to improve the range condition.
6. *FEWER DESIRABLE SEEDLINGS DYING*. On a heavily grazed and drouthy range desirable grass plants may have died. The ones that did not die would indicate that they were more hardy and should be protected for seed production.
7. *MORE SEED STALKS PRODUCED* would include both the current and past seasons' seedstalks within the plot. Usually the more hardy grass plants will make a large number of seedheads.
8. *TALLER LEAVES AND STEMS*. The plot that has the taller grasses normally would have a higher range condition rating than a plot that had shorter grasses. Normally tall grasses produce more forage per acre than short grasses.
9. *MORE VARIETY OF FORAGE BEING PRODUCED*. A range that has a variety of grasses is more desirable than a range that has only one kind. The range that has a variety of forage usually has higher production and a longer grazing period.



An adult leader shows how to determine forage production for two range conditions.

A range that was made up of buffalograss and blue grama would be more desirable than a range that had only blue grama.

10. *APPARENTLY MORE POUNDS OF FORAGE BEING PRODUCED*. With this you have to be able to estimate the differences of usable forage that each plot is producing. If you want to check forage production for different grasses and range conditions for comparison, follow these steps:
  - (a) Measure a plot 3.3 feet or 39 inches square.
  - (b) Clip all forage at ground level.
  - (c) Weigh the clipped grasses and convert to pounds.
  - (d) Multiply pounds of grass by 4,000 to obtain production per acre.
  - (e) Example: Let's say that the clipped grass weighed 4 ounces. Our problem would be set up as  $4 \text{ oz.} = \frac{1}{4} \text{ lb.} \times 4,000 = 1,000 \text{ lb.}$  of forage produced per acre. To find the amount of litter per acre, follow the same steps as for forage production.
11. *LESS INVADING PLANTS*. Know the undesirable—invading—plants for your area.
12. *MORE LITTLE BLUESTEM* means that there would be a higher percentage of this grass in the plot being compared.
13. *MORE SIDEOATS GRAMA* means that there would be a higher percentage of this grass in the plot being compared.
14. *SOIL DEPTH* should be the same for all the plots.
15. *LESS ANNUAL GRASSES AND WEEDS*. Generally the poorer the range condition the more annual grasses and weeds will be present.
16. *PLANTS NOT ON HUMMOCKS*. Plants on hummocks indicates that there has been considerable water and wind erosion. The soil is washed away from the plant crown. This is a serious condition on rangeland and the death rate of individual plants is rather high during drouth.
17. *NORMAL SEASON OF USE LONGER* would indicate that the area had not been grazed long enough to use the available forage on the ground. When there is a mixture of winter and summer grasses, forbs and brush, the use normally will be longer.

# PART I PLANT IDENTIFICATION

Place 'X' opposite correct answer  
under each group.\*

SCORE, PART 1.....

SCORE, PART 2.....

SCORE, PART 3.....

TOTAL - - .....

Name.....

Address.....

1. ☐ A. Bermudagrass  
☐ B. Buffalograss  
☐ C. Carpetgrass  
☐ D. Curly mesquite  
☐ E. Burrograss  
☐ F. ....

8. ☐ A. Dallisgrass  
☐ B. Blue panicum  
☐ C. Halls panicum  
☐ D. Switchgrass  
☐ E. Brownseed paspalum  
☐ F. ....

15. ☐ A. Pink pappusgrass  
☐ B. Arizona cotton  
☐ C. Texas cupgrass  
☐ D. Tanglehead  
☐ E. Vine-mesquite  
☐ F. ....

2. ☐ A. Sideoats grama  
☐ B. Blue grama  
☐ C. Black grama  
☐ D. Red grama  
☐ E. Hairy grama  
☐ F. ....

9. ☐ A. Johnsongrass  
☐ B. Indiangrass  
☐ C. Sand bluestem  
☐ D. Little bluestem  
☐ E. Sideoats grama  
☐ F. ....

16. ☐ A. Little bluestem  
☐ B. Cane bluestem  
☐ C. Sideoats grama  
☐ D. Plains bristlegrass  
☐ E. Blue grama  
☐ F. ....

3. ☐ A. White tridens  
☐ B. Slim tridens  
☐ C. Rough tridens  
☐ D. Hairy tridens  
☐ E. Purpletop  
☐ F. ....

10. ☐ A. Sand lovegrass  
☐ B. Weeping lovegrass  
☐ C. Red lovegrass  
☐ D. Plains lovegrass  
☐ E. Gummy lovegrass  
☐ F. ....

17. ☐ A. Indiangrass  
☐ B. Plains lovegrass  
☐ C. Green sprangletop  
☐ D. Texas cupgrass  
☐ E. Purpletop  
☐ F. ....

4. ☐ A. Little bluestem  
☐ B. Big bluestem  
☐ C. Pinhole bluestem  
☐ D. Silver bluestem  
☐ E. Broomsedge bluestem  
☐ F. ....

11. ☐ A. Western wheatgrass  
☐ B. Texas bluegrass  
☐ C. Texas wintergrass  
☐ D. Canada wildrye  
☐ E. Virginia wildrye  
☐ F. ....

18. ☐ A. Yankeeweed  
☐ B. Western ragweed  
☐ C. Prairie coneflower  
☐ D. Ironweed  
☐ E. Heath aster  
☐ F. ....

5. ☐ A. Texas wintergrass  
☐ B. Rescuegrass  
☐ C. Canada wildrye  
☐ D. Little barley  
☐ E. Texas bluegrass  
☐ F. ....

12. ☐ A. Green sprangletop  
☐ B. Fall witchgrass  
☐ C. Bush muhly  
☐ D. Halls panicum  
☐ E. Balsamscale  
☐ F. ....

19. ☐ A. Common broomweed  
☐ B. Texas filaree  
☐ C. Tallow weed  
☐ D. Texas croton  
☐ E. Englemann daisy  
☐ F. ....

6. ☐ A. Sand dropseed  
☐ B. Meadow dropseed  
☐ C. Smutgrass  
☐ D. Sacaton  
☐ E. Whorled dropseed  
☐ F. ....

13. ☐ A. Annual threeawn  
☐ B. Wright threeawn  
☐ C. Texas wintergrass  
☐ D. Purple threeawn  
☐ E. Italian ryegrass  
☐ F. ....

20. ☐ A. Western bitterweed  
☐ B. Groundsel  
☐ C. Loco  
☐ D. Poison milkweed  
☐ E. Rayless goldenrod  
☐ F. ....

7. ☐ A. Rhodesgrass  
☐ B. Tumble windmillgrass  
☐ C. Hooded windmillgrass  
☐ D. Hairy grama  
☐ E. Texas cupgrass  
☐ F. ....

14. ☐ A. Little barley  
☐ B. Plains bristlegrass  
☐ C. Knotroot bristlegrass  
☐ D. Southwest bristlegrass  
☐ E. Squirreltail  
☐ F. ....

\*If the plant is not listed in the group, mark an "x" by F and write in the space.



## PART II

### RANGE CONDITION CLASSIFICATION AND TREATMENT

Indicate your answers by marking an 'X' in square in front of each word or statement.

#### DEGREE OF UTILIZATION

<input type="checkbox"/>	Unused:	No livestock use.
<input type="checkbox"/>	Light:	Only best plants grazed.
<input type="checkbox"/>	Proper:	All of the range being grazed. The primary forage species are properly utilized.
<input type="checkbox"/>	Severe:	Hedged appearance of shrubs and trampling damage. Primary forage plants almost completely used. Low value plants carrying grazing load.
<input type="checkbox"/>	Destructive:	Much death loss of primary species. Only remnants of good plants surviving. Appearance approaches that of a corral.

#### KIND OF SITE

<input type="checkbox"/>	Bottomland site:	Soils nearly level, fertile and over 20 inches to rock or parent material.
<input type="checkbox"/>	Ordinary upland site:	Rolling land with soils 10-20 inches deep to parent material.
<input type="checkbox"/>	Hills and ridges or shallow soil sites:	Soils less than 10 inches deep or steep, rough, ridges, or canyon areas.
<input type="checkbox"/>	Sandy site:	Sandy land over 20 inches deep.

#### RANGE CONDITION

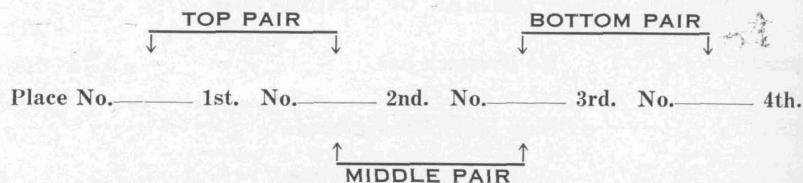
<input type="checkbox"/>	Excellent range:	Where 75 to 100 percent of the vegetation is a mixture of highly palatable perennial plants.
<input type="checkbox"/>	Good range:	Where 50 to 75 percent of all vegetation is highly palatable perennial plants.
<input type="checkbox"/>	Fair range:	Where 25 to 50 percent of all vegetation is highly palatable perennial plants.
<input type="checkbox"/>	Poor range:	Where 0 to 25 percent of all vegetation is highly palatable perennial plants.

#### RECOMMENDED TREATMENT

(Mark only—Practices)

<input type="checkbox"/> 1	Apply a deferred-rotation grazing system.	<input type="checkbox"/> 9	Two year protection from grazing.
<input type="checkbox"/> 2	Deferred grazing during growing season.	<input type="checkbox"/> 10	Use more livestock or longer grazing season.
<input type="checkbox"/> 3	Deferred grazing in spring when range plants first come up.	<input type="checkbox"/> 11	Control noxious weeds.
<input type="checkbox"/> 4	Deferred grazing in fall for seed production.	<input type="checkbox"/> 12	Distribute water or salt for more uniform livestock use.
<input type="checkbox"/> 5	Apply cactus eradication.	<input type="checkbox"/> 13	Apply brush control.
<input type="checkbox"/> 6	Protect from burning.	<input type="checkbox"/> 14	Rotate pasture grazing.
<input type="checkbox"/> 7	Overseed with adapted native grasses.	<input type="checkbox"/> 15	Decrease rate of stocking.
<input type="checkbox"/> 8	Deferred grazing prior to brush control.	<input type="checkbox"/> 16	Use other kinds of livestock.

# PART III RANGE PLACINGS



Place an "X" opposite each reason for placing the best plot of each pair over the other plot.

REASONS	Top Pair I place—over— because: (Use— reasons in this col- umn)	Middle Pair I place—over— because: (Use— reasons in this col- umn)	Bottom Pair I place—over— because: (Use— reasons in this col- umn)
1. Higher percentage of climax grasses			
2. More ground cover			
3. Less erosion and water loss			
4. More plant litter			
5. More desirable seedlings			
6. Fewer desirable grasses dying			
7. More seed stalks produced			
8. Taller leaves and stems			
9. More variety of forage being produced			
10. Apparently more pounds forage being produced			
11. Less invading plants			
12. More little bluestem			
13. More sideoats grama			
14. Deeper soil			
15. Less annual grasses and weeds			
16. Plants not on hummocks			
17. Normal season of use longer			