MP-259

PROPER GRAZING

=MORE PROFIT

TEXAS A&M UNIVERSITY • College Station, Texas
TEXAS AGRICULTURAL EXTENSION SERVICE, J. E. Hutchison, Director

Proper Grazing = More Profit

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KNOWING PLANTS as well as livestock are foundations of the ranching business.

You can keep grass on your range and graze it too, if you plan ahead, use foresight and pay attention to range vegetation. As a ranchman, you actually are in the "grass business," and the livestock you sell is the salable by-product. You can keep the range healthy and productive by knowing plants and grazing animals and how to manage them properly.

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Keeping livestock numbers in balance with forage produced on your pastures or ranges is one of the biggest problems you face. Grazing half and leaving half by weight of current year's growth is correct grass usage. A well-bred animal soon looks like a scrub on scant pasture. Good breeding and adequate nutritious forage pays off in the livestock business. Grass is the cheapest feed that can be grown. The kind and production depends largely on the management of this crop.

Your measuring stick is in terms of pounds of livestock products—not the number of head you raise.

Taking half and leaving half by weight of the current year's growth represents proper grazing use. Little bluestem plant in the center is properly grazed; those to the left, light and unused; and those to the right, severe and destructive.

1

2

Judging Range Potential

Plants are the basic forage resource. The kinds and amounts largely determine the range potential. Certain plants like certain animals have better "breeding" than others. The top ranking plants in a given area have long life, durability, palatability, stamina and high productivity. Most are perennial grasses, legumes and forbs which are preferred by livestock. Knowing these good plants, their abundance and vigor are important factors in judging range productivity. Other factors are:

1. Knowledge of key grazing plants.
2. Kind and depth of soil.
3. Topography.
4. Climate.
5. Previous soil loss.
6. Litter on the ground which holds and absorbs soil moisture.
7. Past grazing use—number of animals and grazing pressures.

3

1

This indicates proper use of a pasture in the Prairies and Timbers vegetative areas.

2

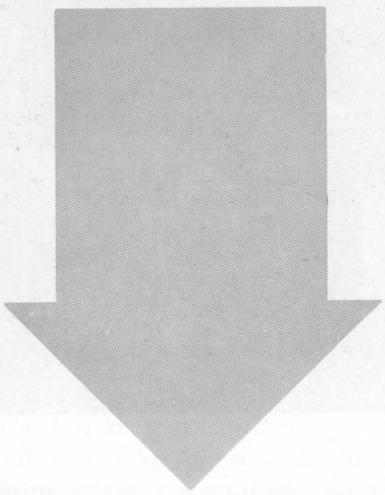
A lightly used pasture as indicated by vigor and increase of climax grasses. Deferred grazing did this.

3

This pasture has been properly stocked to maintain the desirable forage plants. Streams and creeks continued to trickle for weeks after the rains.

Range Signs

Signs on a range are like signs on a highway. They show if a range is going uphill or down. Anyone can see the "danger" signs of a range on the downgrade by close attention to details. The present range condition is not as important as making timely stocking adjustments so that the range will begin to improve or be maintained and show signs of improvement.

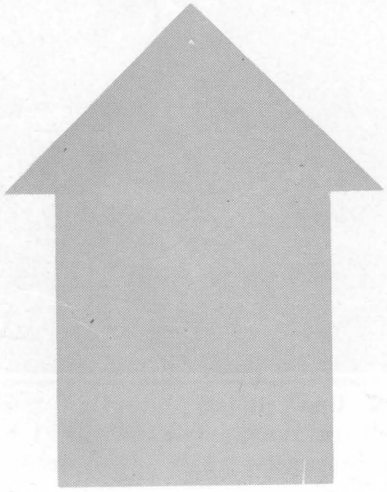


Signs of Range Going Downhill

1. Decrease in number and vigor of key plants —all old plants, no new ones.
2. Invader plants increasing.
3. Plants sitting on knolls; erosion evident.
4. Many trails and bare spots.
5. Baked and crusting condition of soil.
6. Livestock grazing poor plants.
7. Tall shrubs showing distinct browse line.

Signs of Range Going Uphill

1. Increase in seedlings of good grazing plants —old and new plants present.
2. Decrease in number of poor plants.
3. Livestock grazing mostly good plants.
4. Bare areas and trails beginning to cover.
5. Soil erosion not evident.
6. Soil in good condition—surface not crusted.
7. Forage shows proper grazing use—close grazing of better plants not evident.



Proper Stocking

Proper stocking is the key to successful range management. A ranchman can either adjust his livestock numbers or the length of time they are grazed to meet his forage supply. Making adjustments before you are compelled to do so is important. Flexibility in stocking rates is essential to maintain the necessary forage supply.

Research and demonstrations show that grazing half and leaving half of the key management grasses by weight is proper stocking. Half of the plant's weight must be left for its maintenance and well being. A grass plant, like an animal, must have a food reserve. The grass plant is a living factory in which food is made in the leaves and stored in the roots. Since 95 percent of the elements required for grass growth are taken from the air and water and only 5 percent from the soil, sufficient leaves must be ungrazed to manufacture food. Too close grazing soon starves the grass to death, and heavy, frequent grazing shortens the root system which is the pipeline for minerals and water.

Grass roots may weigh one to five times as much as the top growth. One-third to one-half of the roots of perennial grasses are replaced each year. Dead roots leave channels in the soil which allow deep moisture penetration. Parts of the plant that are left form litter on the soil surface. Litter acts as a blotter on the surface to help absorb moisture as it falls and retard evaporation later. Thus, it is the dead and decaying grass roots and litter that may cause a 3-inch rain to penetrate only 4 inches on an overgrazed pasture and 15 inches on a properly stocked pasture.

Proper stocking is beneficial to both the plant and animal. A 19-year study of stocking rates in yearlong grazing at Woodward, Oklahoma, shows the following results:

	Light	Proper	Heavy
Acres/AU	22	17	12
Calf crop percentage	89	92	81
Calf weights, 7 months	512	481	404
Supplemental feed, lb. hay/hd., 1954	0	425	850
Water erosion	none	none	heavy
Lb. forage produced/AU 1956	796	794	468
Lb. forage produced/A, 1960	1300	1412	1178

How Pastures Are Stocked

Wrong Way

1. Necessity.
2. Habit.
3. Convenience.
4. Past history.
5. Livestock condition.
6. As long as any kind of grass is left.

Right Way

1. Check forage production seasonally.
2. Graze half and leave half by weight.
3. Stock at ¾ of the normal breeding herd.
4. Base stocking rate on pounds of forage production.
5. Leave adequate litter and cover.
6. Leave 1/5 of seed stalks of good plants.
7. Move salt from water to obtain uniform forage use.

Management Practices for Increased Production

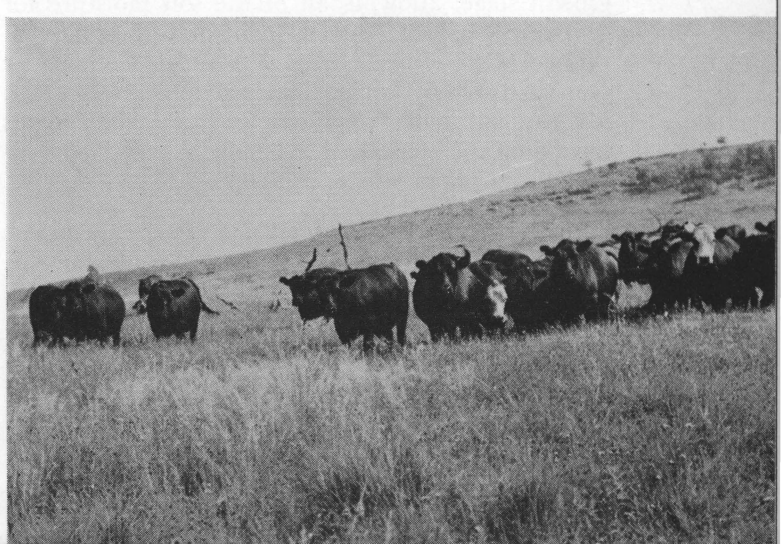
Brush and weed control—Worthless brush, trees and unpalatable weeds use water and plant nutrients which could be used for valuable forage production. Noxious brush is increasing at a rapid rate on Texas rangelands. It is necessary to control brush at a faster rate than at present to reduce brush in relation to grass and to insure high native forage production. Brush control methods should be planned for the entire ranch operation using appropriate methods to improve range conditions, increase forage production and permit proper range management. Noxious plant control must be a planned program rather than piecemeal control measures applied only when growth conditions are ideal for a high degree of plant kill. Some adjustments can be made when drouth and unfavorable growth conditions occur.

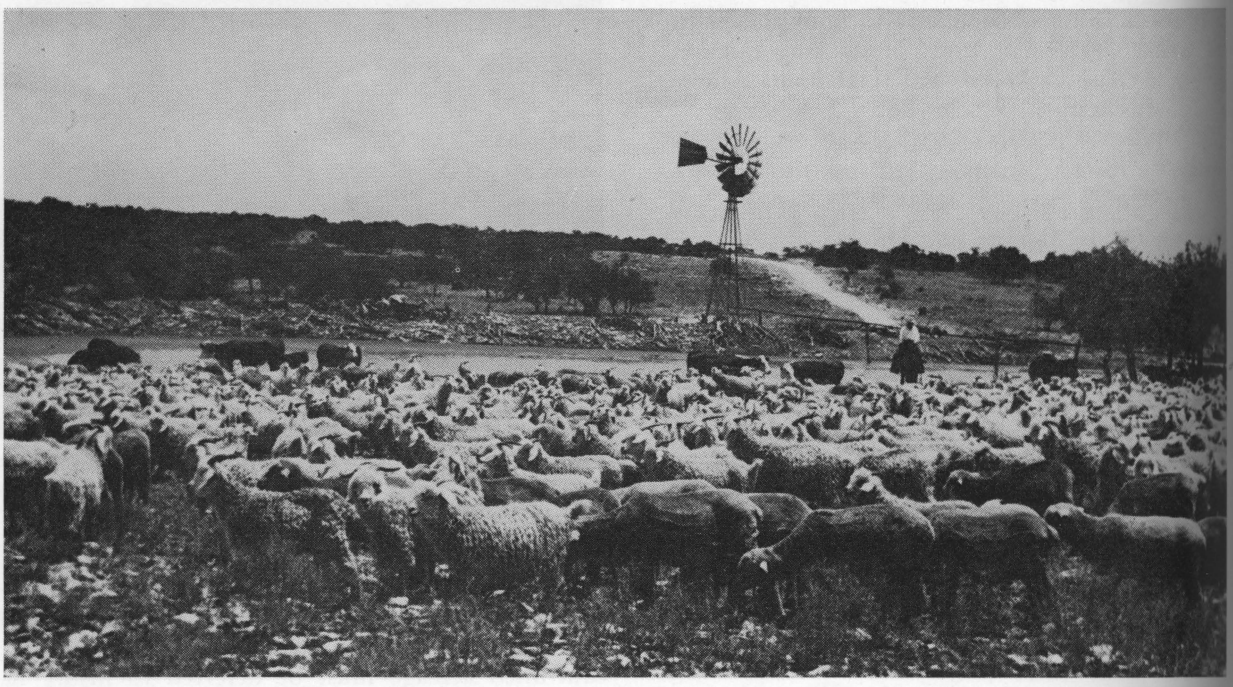
Proper grazing and oak control result in range improvement.

An adequate brush control program should control from 1/4 to 1/6 of the infested acreage each year until all acreage has been included. The controlled acreage must be deferred to insure re-establishment of grass and grazed at the moderate stocking rate to maintain high forage production. When an entire pasture cannot be controlled and deferred at one time, the controlled area must be fenced to keep livestock from concentrating on the controlled acreage and overusing the grasses. After 4 to 6 years, the area will need an additional treatment to maintain the brush controlled acreage. Thus far, brush control is a never-ending practice. Brush will continue to be a problem but a vigorous stand of grass offers considerable competition to brush seedlings and sprouts.

Various mechanical, chemical and biological methods can be applied economically to control noxious plants. The area should be seeded with adapted grasses for rapid grass re-establishment when mechanical methods that disturb the existing turf are used. Chemical methods should be applied

This pasture is overused as shown by many weeds even though the steers are fleshy.





Cattle, sheep and goat stocking is profitable on ranges with a combination of forage plants, such as grasses, forbs and browse. Generally, cattle should comprise 50 percent of the total stocking, with sheep making up 25 percent and goats the other 25 percent. The percentage of the kinds of livestock varies for different range conditions.

at the proper rate, proper season and with proper equipment to insure good results. The herbicide proven by research to control the specific brush species must be used properly to obtain desirable results. The ranchman must evaluate brush control results by the amount of improvement in range conditions and the increase of desirable forage for sustained livestock production rather than the percentage of brush plants killed.

Unpalatable herbaceous weeds appear to reduce the forage production as much as brush plants. Herbaceous weeds generally begin growth early in the spring using a large amount of water and offer considerable competition to grasses for surface soil moisture. Fastest range improvement can be made when annual weeds are controlled during their early growth stage, allowing all of the soil moisture for grass growth. Early weed control is best accomplished with either chemical control methods or grazing different kinds of animals at various rates. Mechanical control methods are used after weeds have attained considerable height to mow the tops without clipping grasses too close.

Deferred and rotation grazing—Most range plants need a chance to rest and produce seed each year. Deferred grazing is usually the cheapest and best method of range recovery. Rotating the rest period between pastures at different seasons of the year benefits the range even more. Including these principles in the grazing management plan pays off.

A 14-year study, conducted at the Ranch Experiment Station, Sonora, comparing a four-pasture deferred rotation grazing system with a yearlong grazing system stocked at the same or heavier rates, showed the following results in favor of the four-pasture system:

1. Livestock numbers increased 11 AU.
2. Deer numbers increased 8 AU.
3. Cattle gained 100 pounds more per head.
4. Sheep and goats gained 20-30 pounds more per head.
5. Wool and mohair fleece weights increased 2-3 pounds per head.
6. Range conditions improved from fair to good.
7. Range conditions improved during the 1950-57 drouth.
8. No animal death loss occurred from bitterweed poisoning.
9. No supplemental feed was necessary.
10. A feed reserve of grass was in the pasture.

11. More livestock grazed longer during periods of drouth.

12. Much faster range recovery of grass vigor and soil protection following drouths.

13. More net profit and a stable ranch economy was realized.

Results of the total livestock production for 7 years from the Texas Range Station near Barnhart are shown in the table below. The stocking rate for combination grazing of the total animal units is 60 percent cattle and 40 percent sheep. Grazed pastures using a deferred rotation program with a combination of stocking have improved considerably in range condition compared to the yearlong grazing program.

Average Total Livestock Production Per Acre from 1958 through 1964

Treatment	Calf Prod./Ac. 205 Day Wts.	Lamb Prod./Ac.	Wool Prod./Ac.	Animal Prod./Ac.
Yearlong—25 A/A.U. Cattle only	13.0	....	....	13.0
Yearlong—25 A/A.U. Sheep only	....	11.2	1.4	12.6
Yearlong—25 A/A.U. Cattle and sheep	7.1	6.5	0.8	14.4
Yearlong—40 A/A.U. Cattle and sheep	4.9	5.0	0.5	10.4
2 Pasture rotation—25 A/A.U.—Cattle and sheep	8.6	6.8	0.9	16.2
4 Pasture rotation—25 A/A.U.—Cattle and sheep	8.6	6.1	0.7	15.4
6 Pasture rotation—25.6 A/A.U.—Cattle and sheep	7.2	5.7	0.7	13.8

Tentative conclusions from this study to date are:

1. Not economical to graze sheep only.

2. The 2 and 4 pasture deferred rotations resulted in superior livestock production.

3. Deferment is necessary to increase desirable forage species such as sideoats grama and cane bluestem.

4. Yearlong grazing with cattle and sheep, regardless of stocking rate, has not resulted in an increase of desirable species.

5. Deferred rotation grazing was highly superior in livestock production compared to yearlong grazing during the drouth.

A 5-year study on the Texas Experimental Ranch near Throckmorton showed the increase of sideoats grama under the different levels of stocking rates and grazing systems. This study was conducted as a cow-calf operation.

Grazing system	Stocking rate	Sideoats Grama Inc.
Yearlong	13 A/A.U.	22 %
Yearlong	20 A/A.U.	47 %
Yearlong	29 A/A.U.	84 %
2 Pasture deferred-rotation	20 A/A.U.	51 %
4 Pasture deferred-rotation	20 A/A.U.	82 %

Sideoats grama has increased most in light rate stocking and in 4-pasture deferred rotation giving these pastures a faster improvement.

Calf weights are about 30 pounds heavier on 4-pasture deferred rotation pastures than the yearlong heavy rate of grazing. The percentage calf crop at this time is about the same under all rates of grazing with a slight advantage for deferred rotation pastures. Key management grasses were not grazed as short in the deferred rotation pastures as they were in the yearlong grazed pastures. Cows lose less body weight during winter on the deferred rotation pastures.

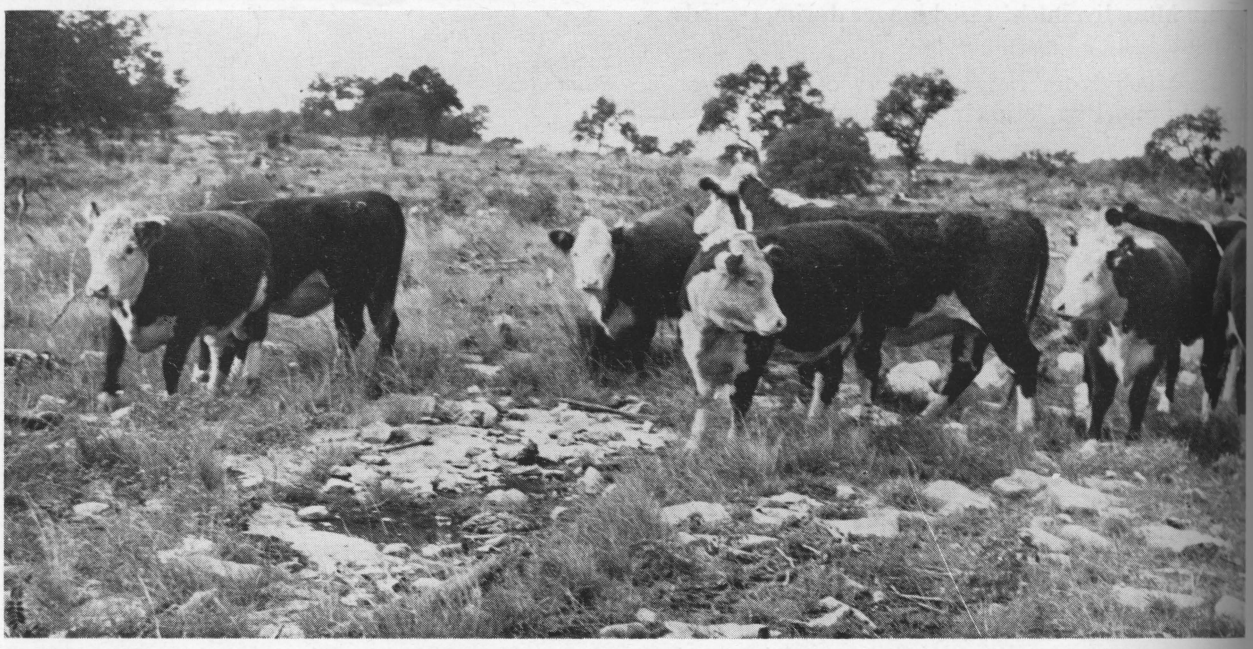
Livestock production has increased one to three times with brush and weed control and proper grazing.

Seeding—On abused rangeland or old cropland with adapted species is advisable. It usually takes nature too long to do the job alone. Selection of proper kinds of adapted plants with good germination, seeded at the correct depth and season and followed with good growing conditions is essential for success. Plants must be well established before they are grazed. Moderate grazing thereafter will maintain the seeded area in high producing palatable forage plants.

Livestock distribution—Adequate cross fencing with sufficient watering places and salting away from water are effective management "tools" which help in livestock distribution. These provide for more uniform use of all forage within a pasture.

Cross fencing of pastures can be done economically by using the suspension type fence. Electric fences can be used successfully to keep livestock from grazing brush controlled and seeded areas.

Periodic checks on your grass account are necessary in the livestock business.



The pay-off is in pounds of production per acre. Even during the drouth, proper stocking, deferred grazing and brush control paid off on this ranch. This grazing program has produced more than similar ranches carrying out an improper grazing system.

Fire protection—Protect ranges from wildfires by establishing proper fire guards and posting fire prevention posters. Plant growth and soil condition can be damaged greatly when uncontrolled wildfires burn ranges during improper weather and moisture conditions. Fire may be used under controlled and supervised conditions in certain areas on specific sites. When fire is used, defer the burned area until the grass has attained a top growth of about 6 inches then graze with the correct number of livestock.

Here's the Proof

Research and demonstrations prove that proper stocking pays. Often fewer livestock mean heavier offspring which bring more at market time. The opposite results when there are too many livestock, less percentage offspring, lighter offspring and a big feed bill with less profit. Grazing studies at the Sonora, Barnhart, Spur and Throckmorton Experiment Substations show that moderate grazing produces more net returns and results in range improvement.

Pointers for Proper Grazing

1. Stock on the basis of forage available instead of so many acres per cow, sheep or goat.
2. Check the grass crop rather than livestock condition. Animals can live on poor quality and low palatability of forage for some time before they look bad.
3. Provide for a forage reserve of cured grass for winter grazing, as well as hay, silage and concentrated feed.
4. Allow for the drouth years.
5. Check the signs listed for range improvement or deterioration.
6. Maintain flexible stocking rates rather than a fixed number of animals.
7. Remember that pounds of production rather than number of head count at the market.

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