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Reference Guide for Texas Ranchers



Texas Agricultural Extension Service
THE TEXAS A&M UNIVERSITY SYSTEM

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Introduction

Effective ranch management requires a tremendous amount of information. At any given time, a ranch manager may be making decisions concerning care and management of livestock, control of noxious plants, use of fire to improve forage quality or reseeding of native pasture. The purpose of this reference guide is to consolidate some of the basic information ranch managers need for proper decision making.

This guide is not intended to be all inclusive or extremely specific. Most of the information was adapted from Experiment Station or Extension Service publications. Some of the information represents "expert opinion" rather than the results of quantifiable research. All of the information was subjected to professional review.

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All of the Texas A&M University System

Common Conversions

Area:

- 1 acre = 43,560 square feet, 209 feet x 209 feet, 69.5 yards x 69.5 yards
- 1/10 acre = 4,356 square feet, 66 feet x 66 feet, 22 yards x 22 yards
- 1/100 acre = 436 square feet, 21 feet x 21 feet, 7 yards x 7 yards
- 1 section = 640 acres or 1 square mile
- 1 hectare = 2.471 acres

Length:

- 1 mile = 5,280 feet, 1,760 yards or 1.61 kilometers
- 1 rod = 16.5 feet
- 1 chain = 66 feet
- 1 kilometer = 0.62 miles
- 1 roll of barbed wire = 1/4 mile or 1,320 feet
- 1 roll of net wire = 330 feet or 20 rods

Weight:

- 1 short ton = 2,000 pounds
- 1 long ton = 2,240 pounds
- 1 pound = 453.6 grams or 16 ounces
- 1 kilogram = 2.2 pounds

Liquid Measure:

- 1 gallon = 128 ounces, 3,785.4 milliliters, 16 cups, 4 quarts, 8.355 pounds or 256 tablespoons
- 1 quart = 0.946 liters, 2 pints or 32 ounces
- 1 pint = 16 ounces or 2 cups
- 1 cup = 8 ounces
- 1 milliliter = 1 cubic centimeter (cc)
- 1 tablespoon = 3 teaspoons
- 1 teaspoon = 5 milliliters
- 1 cubic foot of water = 62.43 pounds or 7.48 gallons
- 1 acre inch of water = 27,154 gallons
- 1 barrel of water = 55 gallons
- 1 barrel of oil = 40 gallons

Calculation of Water Storage Capacity:

- Round tank (gallons) = $3.1416 \times \text{radius squared (ft.)} \times \text{height (ft.)} \times 7.48$
- Rectangular tank (gallons) = $\text{height (ft.)} \times \text{width (ft.)} \times \text{length (ft.)} \times 7.48$

Pressure:

- 1 foot lift of water = 0.433 psi
- 1 psi will lift water 2.31 feet

Livestock Husbandry

Approximate Peak Water Requirements:

- Cattle = 7 to 16 gallons / day
- Horses = 8 to 12 gallons / day
- Sheep and goats = 1 to 4 gallons / day

Approximate Gestation Periods:

- Cattle = 283 days
- Horses = 336 days
- Sheep = 148 days
- Goats = 151 days

Approximate Forage Intake Per Day:

- Sheep = 3.5 percent x body weight
- Goats = 4.0 percent x body weight
- Stocker cattle = 3.0 percent x body weight
- Dry cow = 2.0 percent x body weight
- Lactating cow = 2.5 percent x body weight
- Horse = 3.5 percent x body weight

Minimum Weight and Age of Replacement Heifers for Puberty (Target is 65 percent of Mature Weight)

Breed type	Age	Weight 90% in heat	Weight 70% in heat
English	13 - 16 months	675	625
Exotic (European)	13 - 16 months	776	750
English/exotic cross	13 - 16 months	750	700
Brahman/English cross	16 - 17 months	750	725
Brahman	17 - 20 months	750	725

Guide to Use of Saline Waters for Livestock

Total soluble salts content of waters (mg./liter)	Comments
Less than 1,000	Low level of salinity; should present no serious problems.
1,000 to 2,999	Satisfactory quality. May cause temporary and mild diarrhea to livestock not accustomed to water.
3,000 to 4,999	Satisfactory quality. May cause temporary diarrhea or be refused at first by animals not accustomed to water.
5,000 to 6,999	Can be used with reasonable safety. Caution should be used if water at higher levels is used for pregnant or lactating animals.
7,000 to 10,000	Considerable risk when using this water for pregnant or lactating animals, young, or animals subjected to heavy heat stress or water loss. Older animals may subsist on this water under conditions of low stress.
More than 10,000	Not recommended for use by livestock under any conditions.

Livestock Nutrient Requirements Expressed as Percent Composition of Diet on a Dry Matter Basis and as Daily Nutrients per Animal

Species and class	Crude protein		TDN		Calcium		Phosphorous	
	ozs./day	%	lbs./day	%	ozs./day	%	ozs./day	%
Cow ¹ Dry Lactating	13.6	5.9	7.9	52	0.4	0.18	0.40	0.18
	30.4	9.2	11.0	52	0.9	0.28	0.90	0.28
Ewe ² Dry Lactating	3.4	8.9	1.3	55	0.11	0.28	0.18	0.26
	8.4	10.4	3.3	65	0.40	0.50	0.29	0.36
Doe ³ Dry Lactating	5.0	9.5	1.7	54	0.13	0.26	0.08	0.17
	7.5	11.7	2.5	62	0.19	0.30	0.12	0.20
1 992-pound cow								
2 132-pound ewe								
3 80-pound Spanish doe								

Body Condition and Expected Pregnancy Rate of Mature Cows in 120-Day Breeding Season

Body condition score	Appearance	% Pregnancy
1	Starving; near death; no fat on backbone or ribs; wasting of muscle.	0
2	Very thin; backbone visible; no fat on ribs; wasting of muscle.	0-10
3	Thin; backbone visible with some fat; most ribs visible.	10-40
4	Backbone slightly visible; foreribs not visible; 12th and 13th ribs visible.	60-70
5-minimum target	Smooth over top, along ribs and around hooks and pins.	80-85
6-desired target	Smooth over back and ribs; full hindquarters with slight fat around tailhead.	85-90+
7	Very smooth and fat over ribs and tailhead; some fat in dewlap.	90+
8	Large amounts of fat in tailhead and dewlap.	90+
9	Obese; over-conditioned.	80-90+

Average Composition of Common Feeds

Feedstuff	% Dry matter	% Crude protein	% TDN	% Calcium	% Phosphorous
Alfalfa hay	86	18.3	58	2.01	0.28
Beet pulp, dried with molasses	92	10.1	76	0.61	0.10
Bermudagrass hay	91	8.9	48	0.46	0.18
Bone meal (steamed)				30.9	13.9
Corn	88	10.1	90	0.02	0.35
Cottonseed hulls	90	3.9	37	0.14	0.09
Cottonseed (whole/ground)	93	23.1	84	0.14	0.68
Cottonseed meal (41%)	93	44.3	78	0.21	1.16
Dicalcium phosphate				26.0	18.0

Johnsongrass hay	91	7.0	51	0.73	0.28
Limestone				38.0	
Monosodium phosphate					22.0
Oats grain	89	13.3	77	0.07	0.38
Oats hay	88	8.1	54	0.23	0.21
Sorghum grain	89	11.1	74	0.04	0.31
Soybean oil meal	89	49.9	84	0.07	0.27
Wheat hay	86	6.4	57		
Wheat straw	90	3.2	43	0.15	0.07
20% cube	90	20	68	0.70	0.85
39% cube	90	39	69	0.20	1.10
20% block	90	20	57	1.3	0.85
36% block	90	36	48	1.7	1.1

Expected Shrink in Feeder Steers

Conditions	Time	% shrink
Drylot	8 hrs.	3.3
	16 hrs.	6.2
	24 hrs.	6.6
Moving truck	8 hrs.	5.5
	16 hrs.	7.9
	24 hrs.	8.9

Implants for Suckling Beef Calves and Stocker Cattle

Trade name	Manufacturer	Class of livestock	Payout period
Ralgro®	Schering-Plough Animal Health	For suckling beef calves up to weaning. Not for bull calves intended for reproduction, calves less than 1 month old, or veal calves.	70-100 days
Synovex-C®	Ft. Dodge Animal Health	For suckling beef calves up to 400 lbs. Not for bull calves intended for reproduction, calves less than 45 days old, or veal calves.	100-140 days
Calfoid® or Implus-C®	Upjohn Co.	For suckling beef calves up to 400 lbs. Not for calves intended for reproduction or calves less than 45 days old.	100-140 days

Component-C®	VetLife Inc.	For suckling beef calves up to 400 lbs. Not for calves intended for reproduction or calves less than 45 days old.	100-140 days
Compudose®	VetLife Inc.	For suckling steers, weaned steers and heifers. Not for use in replacement heifers.	170-200 days
Encore®	VetLife Inc.	For suckling steers, weaned steers and heifers. Not for use in replacement heifers.	400 days
Synovex-S®	Ft. Dodge Animal Health	For steers more than 400 lbs.	100-140 days
Synovex-H®	Ft. Dodge Animal Health	For heifers more than 400 lbs. Not for replacement heifers.	100-140 days
Component-S®	VetLife Inc.	For steers more than 400 lbs.	100-140 days
Component-H®	VetLife Inc.	For heifers more than 400 lbs.	100-140 days
Implus-S®	Upjohn Co.	For steers more than 400 lbs.	100-140 days
Implus-H®	Upjohn Co.	For heifers more than 400 lbs.	100-140 days
Revalor-G®	Hoechst-Roussel Agri-Vet. Co.	For weaned steers and heifers. Not for replacement heifers.	100-140 days

Grazing Management

Animal Unit:

- Commonly defines the average amount of forage consumed by a cow/calf production unit during a year as equal to 26 pounds of dry matter per day.

Warning Signs of Overgrazing:

- Abundance of unpalatable plants
- Distinct browse lines on woody plants
- Pedestaled plants
- Steep gully banks

- Low plant vigor
- Increased need for supplementation
- Increased livestock use of unpalatable plants
- Losses of livestock to toxic plants

Grazing Management Rules of Thumb:

- With proper grazing only 25 percent of each year's annual forage production is consumed by live-stock.
- Insects, rabbits, trampling, etc. consume 25 per-cent of each year's annual forage production.

Approximate Dry Matter Content

Growth stage	Plant type		
	Mid-grasses	Short grasses	Forbs
Initial to heading	40%	45%	20%
Heading to flowering	55%	60%	40%
Seed ripe, leaf tips dying	65%	80%	60%
Leaves dry, stems partly dry	90%	90%	90%
Dormant	95%	95%	100%

Animal Unit Equivalency Table

Kind and class of livestock	Approximate animal unit equivalent ¹
Cow (1,000-lb.) with calf	1.0
Dry cow (1,000-lb.)	0.77
Heifer (600- to 900-lb.)	0.6 - 0.8
Steer (600- to 900-lb.)	0.7 - 0.9
Bull (1,500-lb.)	1.2
Horse (800-lb. yearling)	1.1
Horse (1,000-lb. 2-yr.-old)	1.35
Horse (1,100-lb. 3-yr.-old and older)	1.5
Ewe (130-lb.)	0.18
Weaned lamb (75-lb.)	0.10
Ram (175-lb.)	0.25
Nanny (70-lb.)	0.11
Weaned kid (35-lb.)	0.05
Billy (125-lb.)	0.19
Whitetail deer	0.17
Mule deer	0.25

¹ Animal unit equivalents will vary significantly depending on the weight and physiological stage of the animal.

Maximum Livestock Travel Distance to Water

Terrain	Miles
Rough	0.5
Rolling, hilly	1.0
Smooth, flat	2.0
Sandy	1.5
Undulating dunes	1.0

Suggested Reduction in Grazing Capacity for Different Slopes

Percent slope	Percent reduction in grazing capacity
0 - 10	0
11 - 30	30
31 - 60	60
more than 60	100

Minimum Plant Residue Levels to Sustain Production

Range type	Pounds/acre	Stubble height (inches)
Short grass	300 - 500	1.5
Mid-grass	750 - 1,000	4 - 6
Tall grass	1,200 - 1,500	8 - 10

Suitable Plot Sizes for Vegetation Sampling with Associated Conversion Factors

Vegetation type	Plot dimensions (inches)	Conversion factor ¹	
		Grams	Ounces
Arid rangeland (less than 15 inches of rainfall)	36 x 36	10.67	302
Semi-arid rangeland (16 to 30 inches of rainfall)	24 x 24	24.00	680
Humid rangeland (more than 30 inches of rainfall)	18 x 18	42.68	1,210

¹ Measure harvested oven-dry weight (less sack weight) in grams or ounces and multiply by the conversion factor to obtain pounds per acre.

General Description of Commonly Used Grazing Systems

Grazing system	Herds	Pastures	Comments
High Intensity - Low Frequency (HILF)	1	4+	Grazing period > 14 days Rest period > 90 days
Short Duration Grazing (SDG)	1	4+	Grazing period < 14 days Rest period < 90 days
Merrill	3	4	Each pasture grazed 12 months, rested 4 months
SwitchBack	1	2	Graze periods are 3 months (P-1), then 3 months (P-2), then 6 months (P-1), etc.
Rotational	1	3-4	Graze periods vary from 4 months (4-pasture) to 6 months (3-pasture)
	2	3	Each pasture grazed 6 months, rested 3 months
Decision Rotation	a/	a/	No set movement
Year-long Continuous	a/	a/	Pasture grazed continuously year-long
Seasonal Continuous	a/	a/	Pasture grazed during specific season each year
a/ No specific number			

Rangeland Weed and Brush Control

Common Herbicides

Herbicide common name	Product name	Active ingredient or acid equivalent
2,4-D	Severol	Variable
Clopyralid	Reclaim®	3 lbs./gal.
Dicamba	Banvel® or Clarity®	4 lbs./gal.
Dicamba: 2,4-D(1:2.87)	Weedmaster®	4 lbs./gal.
Glyphosate	Severol	Variable
Hexazinone	Velpar L® Pronone Power Pellet®	2 lbs./gal. 75%
Imazapyr	Arsenal®	2 lbs./gal.
Metsulfuron	Ally® or Escort®	60%
Paraquat	Gramoxone Extra®	2.5 lbs./gal.
Picloram	Tordon 22K®	2 lbs./gal.

Picloram:2,4-D (1:4)	Grazon P+D®	2.5 lbs./gal.
Tebuthiuron	Spike 20P®	20%
Triclopyr	Remedy®	4 lbs./gal.
Triclopyr:2,4-D (1:2)	Crossbow®	3 lbs./gal.

Calibration of Boomless/Clusterjet Nozzle Sprayers:

- Fill spray tank with water to a marked level.
- Drive in a straight line for 660 feet, operating the sprayer at a constant pressure and speed.
- Refill the tank to the original level to determine the number of gallons used.
- Measure the width (ft.) of the area sprayed.
- Calculate as follows:

$$\frac{\text{gallons used} \times 66}{\text{width of sprayed area (feet)}} = \text{gallons sprayed per acre}$$

$$\frac{\text{tank capacity (gallons)}}{\text{gallons sprayed per acre}} = \text{acres sprayed per tank}$$
- Add the appropriate amount of herbicide to the tank and fill.

Calibration of Boom Sprayers:

- Record the time required to travel 100 feet under spraying conditions.
- Record the number of ounces sprayed from one nozzle for the length of time required to drive 100 feet.
- Calculate as follows:

$$\frac{40 \times \text{ounces sprayed}}{\text{nozzle spacing (inches)}} = \text{gallons sprayed per acre}$$

$$\frac{\text{tank capacity (gallons)}}{\text{gallons sprayed per acre}} = \text{acres sprayed per tank}$$
- Add the appropriate amount of herbicide to the tank and fill.

Adjuvants:

Adjuvants are chemicals added to herbicide spray mixtures to enhance or modify the herbicide and/or physical properties of the spray mix. Examples are as follows:

- Surfactants – decrease the surface tension of water in the spray mix and thus improve “wetting” of the target plant with the herbicide spray. There are many commercial surfactants available, although liquid dishwashing detergent can be used in their place for hand treatments. A surfactant should always be used when mixing a herbicide in a water carrier, unless the herbicide label specifies otherwise.
- Emulsifiers – used to make oil:water spray emulsions. An emulsifier should not be used as a surfactant, or a surfactant used as an emulsifier. They are not interchangeable. Any time diesel fuel oil is added to a mixture of herbicide and water in the spray tank, an emulsifier must be used.

- Penetrants – generally restricted in rangeland herbicide applications to streamline basal bark applications. Penetrants improve the penetration of the herbicide through the bark. Because of this, special care should be taken to avoid skin contact with the herbicide/penetrant spray mix.
- Dyes – added to the spray mix to identify sprayed plants and to ensure thorough coverage of the sprayed plants. Dyes are available in both oil and water soluble formulations. Use only water soluble dyes when mixing herbicides with water, and oil soluble dyes when mixing herbicides with diesel fuel.
- Drift Control Additives – added to spray mixtures to reduce the movement of herbicide sprays off the target area by wind. Drift control additives reduce the percentage of fine droplets produced by the spray nozzle.

Basal Bark Application Techniques:

- Conventional basal:
Apply diesel fuel oil, kerosene or a herbicide / diesel fuel oil mixture (2 to 4 percent herbicide) to the lower 12 to 18 inches of the trunk of a brush plant. The solution is applied completely around the trunk with sufficient volume to allow runoff and puddling at the soil surface.
- Low-volume basal or Brush Busters stem spray:
Apply a mixture containing diesel fuel oil plus 15 to 25 percent herbicide to wet the lower 12 to 18 inches of the trunk completely around the trunk, but not to the point of runoff.
- Streamline basal:
Apply a mixture containing diesel fuel oil plus 15 to 25 percent herbicide, or diesel fuel oil plus 15 to 25 percent herbicide and 10 percent penetrant, in a band (3 to 4 inches wide) completely around the trunk near ground level.

Addition of Surfactants to Foliar Sprays:

- 1 to 2 qts. per 100 gals. of water
- 2 to 4 tsps. per gal. water

Broadcast vs. Individual Plant Treatment:

- Fewer than 300 to 400 stems / acre, use individual plant treatments
- More than 300 to 400 stems / acre, use broadcast treatments

Weed Control

- Spray when weed density is three or more per square foot.

Determining Stems per Acre:

- Mark off area 22 yards by 22 yards.
- Count stems within this area.
- Multiply the number of stems by 10.

Recommended Tractor Size(s) for Various Rangeland Brush Control Implements

Implement	Recommended tractor size
Roller choppers (heavy duty) less than 10 ft. wide more than 10 ft. wide	D7 crawler tractor D8 crawler tractor
Chains (minimum 180 ft.)	D6 - D8 crawler tractor
Rootplows	D7 - D8 crawler tractor
Heavy offset disks	D8 crawler tractor
Front mounted grubbers high energy low energy	D6 - D7 crawler tractor D3 - D5 crawler tractor; 35- to 120-hp farm tractor or wheeled loader
Rear mounted grubbers	35- to 120-hp farm tractor

Quantity of Herbicide Needed to Obtain Various Concentrations

To mix	Concentration desired					
	1/2 %	1 %	2 %	5 %	15%	25%
1 gal.	2/3 oz.	1 1/3 oz.	2 2/3 oz.	6 1/2 oz.	19 oz.	1 qt.
3 gals.	2 oz.	4 oz.	8 oz.	19 oz.	57 oz.	3 qts.
5 gals.	3 1/3 oz.	6 1/2 oz.	13 oz.	1 qt.	3 qts.	1 1/4 gals.
10 gals.	6 1/2 oz.	13 oz.	26 oz.	2 qts.	1 1/2 gals.	2 1/2 gals.
25 gals.	1 pt.	1 qt.	2 qts.	1 1/4 gals.	3 3/4 gals.	6 1/4 gals.
50 gals.	1 qt.	2 qts.	1 gal.	2 1/2 gals.	7 1/2 gals.	12 1/2 gals.
100 gals.	2 qts.	1 gal.	2 gals.	5 gals.	15 gals.	25 gals.

Prescribed Burning

Red Flag Conditions for Winter Burns:

- Wind speed greater than 20 mph
- Relative humidity less than 20 percent
- Air temperature greater than 80 degrees F

Fine Fuel Loads for Effective Burns:

- Minimum of 1,500 to 2,000 pounds/acre
- Optimum of 3,000 pounds/acre or more

Diesel: Gasoline Mixture for Drip Torches:

- 60 to 75 percent diesel plus 25 to 40 percent gasoline

Optimum Weather Conditions for Winter Backfires:

- Relative humidity between 40 and 60 percent
- Air temperature between 40 and 60 degrees F
- Wind speed between 5 and 8 mph

Optimum Weather Conditions for Winter Headfires:

- Relative humidity between 25 and 40 percent
- Air temperature between 70 and 80 degrees F
- Wind speed between 8 and 15 mph

Texas Air Control Board Regulations for Prescribed Burns:

- Wind speed must be between 6 and 23 mph.
- Burn must be started no earlier than 1 hr. after sunrise.
- Burn must be completed no later than 1 hr. before sunset.
- Burn must be at least 300 feet from adjacent residential, recreational, commercial or industrial properties.
- Burn cannot be conducted when atmospheric temperature inversions are predicted.
- Burn must be outside corporate limits of a city or town.

Minimum Downwind Protection (Backfire + Mineral Fireline Width):

- Slightly volatile fuels = 50 to 100 feet
- Moderately volatile fuels = 100 to 200 feet

- Highly volatile fuels = 300 to 500 feet

Minimum Mineral Fire Line Width:

- 8 feet + 1 foot per mph of wind expected

Seeding Rangeland

Need:

- Pastures should be reseeded if desirable plants make up less than 10 percent of the total vegetation available.

of small and large seed, determine the planting depth by the diameter of the smallest seed. In most rangeland seedings, plant the seed about 1/4 to 1/2 inch deep but not deeper than 3/4 inch.

Seed Sources:

- For best results using native species, use seed grown within 200 miles north or south and 100 miles east or west of the area to be seeded.

Seeding Depth:

- As a rule, plant seed at a depth four to seven times the diameter of the seed. When using a mixture

Timing:

- Warm season plants may be seeded successfully during late winter to early spring across most of Texas. The Trans-Pecos region is best suited to mid-summer seeding dates for warm season species. In the more southern areas of the state where a rainfall peak occurs in the fall, seeding in late summer or early fall may be more desirable.

- Cool season plants may be seeded either in the spring or early fall, though late summer or fall normally is best.

Weed Control:

- Do not spray herbicide on areas recently seeded until grass has developed four to five true leaves.

General Seeding Rates for Grasses Commonly Used in Range Seedings

Species	Seeding rate (lbs. of PLS/acre) ¹	
	40-in. rows	Drill/broadcast
Alkali sacaton	0.4	1.0
Angleton bluestem	0.4	1.0
Big bluestem	2.0	6.0
Black grama	0.5	1.5
Blue grama	0.5	1.5
Blue panicgrass	0.8	2.0
Boer lovegrass	0.8	1.5
Buffelgrass (burs/grain)	1.0/0.5	2.0/1.5
Buffalograss (burs/grain)	5.0/—	16.0/3.0
California cottontop	0.4	1.2
Caucasian bluestem	0.5	1.2

Eastern gamagrass	10.0	20.0
Pete and Luka varieties	8.0	15.0
Gordo bluestem	0.5	1.2
Green sprangletop	0.7	1.7
Indiangrass	1.5	4.5
King Ranch bluestem	0.5	1.2
Kieberg bluestem	0.5	1.2
Kleingrass	0.5	1.5
Lehmann lovegrass	0.5	1.5
Little bluestem	1.2	3.4
Medio bluestem	0.4	1.0
Old World bluestem	0.5	1.2
Plains bristlegrass	1.0	3.0
Rhodesgrass	0.4	1.0
Sand bluestem	2.0	6.0
Sand dropseed	0.4	1.0
Sand lovegrass	0.5	1.5
Sideoats grama	1.5	4.5

General Seeding Rates for Grasses Commonly Used in Range Seedings (continued)

Switchgrass (Alamo)	0.8	2.0
All other varieties	1.2	3.5
Weeping lovegrass	0.5	1.5
Western wheatgrass	2.4	7.0
Wilman lovegrass	0.5	1.5
Yellow bluestem	0.6	1.8
¹ PLS (pure live seed) = (% germination + % hard seed) X % purity		

Suggested Additional References

- **Livestock Husbandry**

Sheep Production Handbook. American Sheep Industry Association. 6911 South Yosemite, Suite 200, Englewood, Colorado 80112-1414.

Texas Beef Cattle Management Handbook. Texas Agricultural Extension Service, SP-50.

Angora Goat & Mohair Production. Mohair Council. P.O. Box 5337, San Angelo, Texas 76902.

- **Grazing Management**

“Stocking Rate Decisions.” Texas Agricultural Extension Service, B-5036.

“Balancing Forage Demand with Forage Supply.” Texas Agricultural Extension Service, B-1606.

“How Much Forage Do You Have?” Texas Agricultural Extension Service, B-1646.

“Range Monitoring with Photo Points.” Texas Agricultural Extension Service, L-5216

- **Rangeland Weed and Brush Control**

“Chemical Weed and Brush Control - Suggestions for Rangeland.” Texas Agricultural Extension Service, B-1466.

- **Prescribed Burning**

“Prescribed Range Burning in Texas.” Texas Agricultural Extension Service, E-37.

“Planning a Prescribed Burn.” Texas Agricultural Extension Service, L-2461.

Prescribed Burning for Brush Management - The South Texas Example. Texas A&M University Press, College Station, Texas 77843.

- **Seeding Rangeland**

“Seeding Rangeland.” Texas Agricultural Extension Service, B-1379.

● Internet Sites of Interest

Texas Natural Resource (TEXNAT) <http://texnat.tamu.edu>

Texas Parks and Wildlife <http://www.tpwd.state.tx.us/>

Center for GrazingLand and Ranch Management
<http://cnrit.tamu.edu/cgrm/>

Sheep and Goat Marketing Page
<http://www.intercom.net/user/sschoen/market.html>

Oklahoma State University Breeds of Livestock
<http://www.ansi.okstate.edu/BREEDS/>

Texas Extension Animal Science
<http://animalscience-extension.tamu.edu/>

Texas A&M Department of Rangeland Ecology and
Management <http://cnrit.tamu.edu/rlem/>

Publications from the Texas Agricultural Extension Service
are available at this Web Site: <http://texaserc.tamu.edu/>

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