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TEXAS AGRICULTURAL EXTENSION SERVICE

TEXAS AGRICULTURAL EXTENSION SERVICE • ZERLE L. CARPENTER, DIRECTOR
THE TEXAS A&M UNIVERSITY SYSTEM • COLLEGE STATION, TEXAS

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The word conservation, often interpreted to mean "wise use," is derived from two Latin words: *con,* meaning "together," and *servare*, meaning to "keep" or "guard." Ethics is defined as "standards of conduct ." Thus, this publication deals with the "standards of conduct" for "keeping together" the land, wildlife and livestock resources of small acreages.

Why Target Small Acreage Landowners?

In 1870, three-fourths of all Americans were either farmers, ranchers or residents of small rural communities who maintained a close relationship with the land. Over the last 100 years, however, the country has changed from a rural to an urban society. Now, more than half the population of Texas is located in its urban centers (E1 Paso, Austin, San Antonio, Houston, Ft. Worth and Dallas).

Although most Texans live in the city, many yearn to return to a more rural lifestyle. Perhaps they heed the counsel of Stewart Udall in The *Quiet Crisis,* who said, "If you want inner peace, find it in solitude, not speed, and if you would find yourself, look to the land from which you came and to which you go." Almost every city and town in Texas is surrounded by a multitude of small tracts of land (5 to 100 acres) owned by individuals who work in the city but use the land as their principal or weekend residence. Collectively, these small acreage landowners own hundreds of thousands of acres of forest and rangeland in Texas.

Unfortunately, small acreage tracts are some of the most abused lands in Texas. Aldo Leopold, a crusader for land ethics, stated in *A Sand County Almanac,* "We abuse land because we regard it as a commodity belonging to us. " While a sense of ownership may contribute to the abuse of land, ignorance of the proper ways to manage basic natural resources is probably the major factor.

Ethical Land Management

Overgrazing

The most prevalent kind of land abuse on small acreages is the destruction of desirable, perennial vegetation through overgrazing by livestock (Fig. 1). Native, perennial plants will not survive and reproduce if continuously grazed to ground level. Small acreage landowners often overestimate the forage production potential of their land and underestimate the forage requirements of their livestock.

Why should a small acreage landowner be concerned with overgrazing? First, overgrazing destroys vegetation that protects the soil surface. Without this protection, soil will be rapidly lost to wind and water erosion. One inch of top soil can be lost in a single rain, and it takes hundreds of years to replace that lost inch. Rainfall runoff from unprotected soil surfaces carries undesirable silt into local rivers and lakes.

Overgrazing also produces low yielding and widely fluctuating forage supplies. Plant species that survive or increase under heavy grazing pressure are usually shallow-rooted annuals. These plants are generally poor forage for livestock, and some are toxic.

Conversely, proper grazing results in a more stable and diverse forage supply with drought resistant plants that provide nutritious, palatable forage for livestock and wildlife. This kind of vegetation reduces erosion, which protects the long-term productivity and stability of the land. Properly grazed small acreages are also more aesthetically pleasing, which translates to a higher real estate value.

Figure 2 graphically illustrates the minimum daily forage demand, on a dry matter basis, for four species of livestock. Unfortunately, pasture forages are not 100 percent dry matter. Grasses may vary from 40 percent dry matter in the early spring to 95 percent dry matter when dormant. Weeds may only contain 20 percent dry matter when lush

Fig. 1. Overgrazing by livestock is the most common abuse of small acreage landholdings,

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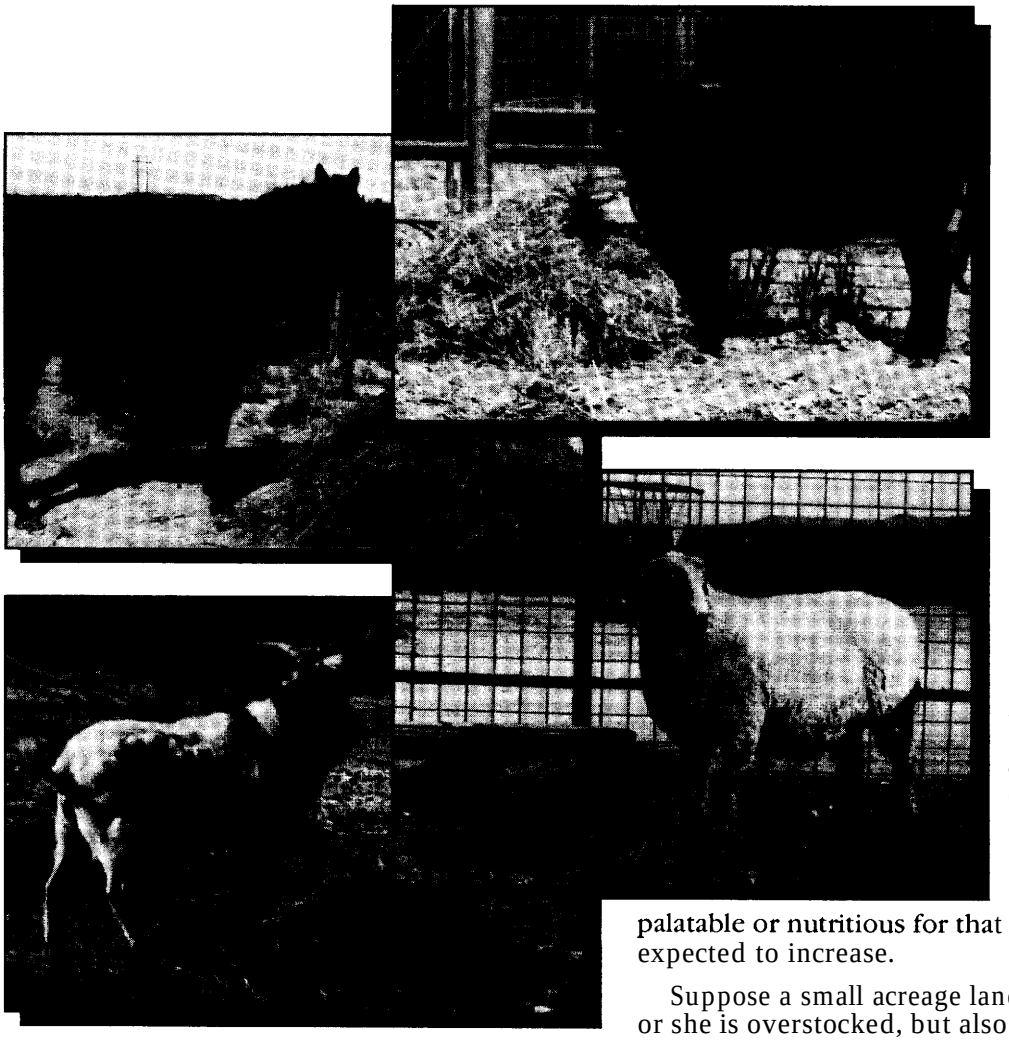

Fig. 2. **Clockwise from top left: minimum daily forage requirements for a horse (2 percent of body weight); cow (2 percent of body weight); sheep (3 percent of body weight); and goat (4 percent of body weight).**

and growing. Also, livestock forage requirements increase significantly if the animals are pregnant, nursing offspring or heavily worked. Since only 25 percent of each year's perennial forage production can be utilized by livestock without overgrazing, it becomes apparent that balancing livestock numbers with fluctuating forage supplies can become quite complicated.

The carrying capacity of a particular pasture can be estimated by comparing the vegetation in the pasture with the pictures in Figure 3. If forage supplies in the pasture are similar to Figure 3a, it will require more than 60 acres to provide the forage required for an average size horse for 1 year. The same would also be true for a mature cow. If pasture forage conditions are more similar to Fig. 3b, at least 25 acres will be required. At least 13 acres of forage similar to Figure 3c would be required for each horse or cow, while forage conditions similar to 3d would require only about 4 acres.

It is important to remember that not all plants growing in a pasture are desirable or usable by all species of livestock and wildlife (Fig. 4). The diets of cattle and horses are predominately grasses. Sheep prefer weeds, while goats and deer will utilize woody plants. As the grazing pressure from a particular animal species increases, plants not palatable or nutritious for that animal can also be expected to increase.

Suppose a small acreage landowner realizes he or she is overstocked, but also hates to part with the two family horses. Is there a solution to this problem? The answer is Yes. By restricting the horses to roomy pens during most of the day and allowing only limited access to the pasture, grazing pressure can be controlled. The pasture should serve as an exercise area only. The bulk of the animals' dietary needs should come from feed concentrates and hay. Feed bills may not significantly increase, since most overgrazed pastures provide little usable forage. Also, the probability of losing an expensive animal to toxic plants will be greatly reduced.

Weed and Brush Control

Many small acreage landowners may wish to control weeds and/or brush to improve the appearance of their property or to enhance the forage and habitat available for wildlife or livestock. Herbicides, used safely, are effective for such purposes. Unfortunately, some landowners don't know enough about the proper use of herbicides, and this often results in poor control or damage to desirable shrubs and trees (Fig. 5).

Basic precautions when using herbicides include:

- Always read and follow label directions, The label will detail the rate, timing and method of application. The label will also state specific

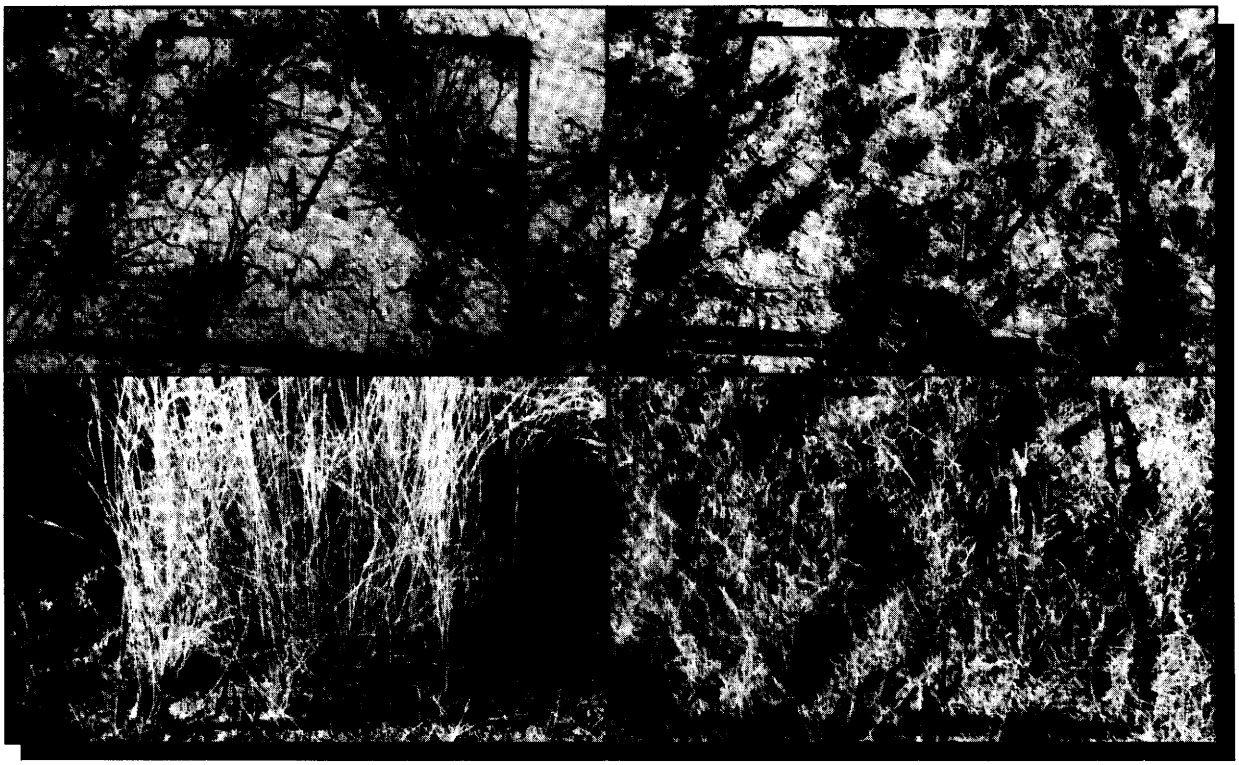

Fig. 3. Top left: 400 pounds of forage/acre = 60 acres/horse or cow
Top right: 1000 pounds of forage/acre= 25 acres/horse or cow
Bottom right: 2000 pounds of forage/acre= 13 acres/horse or cow
Bottom left: 6000 pounds of forage/acre = 4 acres/horse or cow

circumstances under which the herbicide can or cannot be used. For example, some herbicides are labeled for rangeland, while others are prohibited from use where livestock graze. The user is required by law to precisely follow label directions.

- Do not apply herbicides when the weather is hot or windy. Under these conditions, herbicides can volatilize and drift miles from the target area, possibly damaging desirable plants.
- Do not dump, mix or apply herbicides near well heads. Such practices can result in the contamination of ground water.
- Dispose of all herbicide containers according to label directions.

A license is required for the purchase and application of some herbicides. This license is obtained through the Texas Department of Agriculture (TDA). Classroom training and a test are given before the license is issued. A fee is charged for the license. Periodic training, approved by the TDA, is required to maintain the license. Contact the TDA or your county Extension agent for more information concerning licensing requirements.

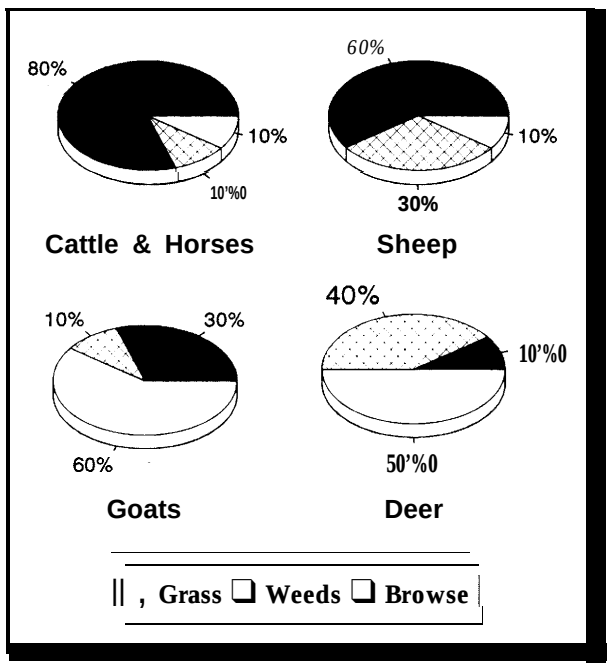

Fig. 4. General diet composition of cattle, horses, sheep, goats and deer,

Fig. 5. This beautiful liveoak tree was damaged by the careless application of herbicide to control mesquite.

Endangered Species

In January 19$)2, there were more than 150 plant and animal species listed as endangered or threatened in Texas. This number can be expected to increase. The Endangered Species Act prohibits the "taking" of an endangered species. "Taking" is broadly defined as everything from harming an endangered animal or plant to altering its critical habitat. Thus defined, the "take" provision may affect many small acreage landowners.

For example, the golden-cheeked warbler is an endangered songbird found in central Texas. This bird's prime nesting habitat centers around stands of mature ashe juniper ("cedar") with a closed canopy, as commonly found on the western outskirts of Austin (Fig. 6). Under the Endangered Species Act it maybe illegal to control juniper in areas defined as critical habitat for the warbler. This can pertain even to the removal of junipers along or within a fenceline.

Small acreage landowners are advised to become aware of possible constraints on plant control or management because of the presence of endangered species. The Texas Parks and Wildlife Department, U.S. Fish and Wildlife Service, USDA Soil Conservation Service or the Texas Department of Agriculture can provide assistance in this area.

Ethical Wildlife Management

The aesthetic and recreational values (e.g., hunting) are often important motives for purchasing rural property. The opportunity to enjoy wildlife in their natural surroundings is not only a means of relieving stress, but also of teaching children the importance of being a good steward.

However, just as the size of a parcel of land can limit its potential for livestock' production, the same can be true for wildlife. For example, a 5-acre tract of land may be suitable for attracting songbirds, but is inadequate for effectively managing quail or deer. It is difficult to improve a deer herd unless the management plan can encompass several thousand acres! Thus, when establishing goals for managing wildlife on small acreages, one must consider the limitations.

Unlike livestock, native wildlife species are not bound by private ownership. In Texas, wildlife are held in a public trust and managed by the state. Nor does wildlife respect property lines (Fig. 7). For example, a deer's home range is generally 1 to 2 square miles, while a covey of quail will range over about 50 acres. Home range size varies with the species involved and the quality of the habitat.

In order for land to be attractive to wildlife, certain habitat requirements must be fulfilled, namely food, water, cover, and the proper arrangement of these items. Small parcels of land can be managed to provide any or all of these. Some ways to make land attractive to wildlife are to plant food plots, limit livestock grazing and encourage a variety of plant species. In general, monoculture like bermudagrass pasture or pine plantations are of limited value to most species of wildlife.

Generally, the greater the diversity of plant species, the greater the diversity of wildlife that will inhabit the area. To get this diversity, leave some areas brushy and/or exclude or limit livestock grazing in certain areas. Allowing weeds to grow in specific areas can also be beneficial for wildlife. If there is no woody plant cover, plant shrubs such as plum, Russian olive or various sumacs. Bare-root seedlings can be purchased from your local Soil and Water Conservation District or from the Texas Forest Service.

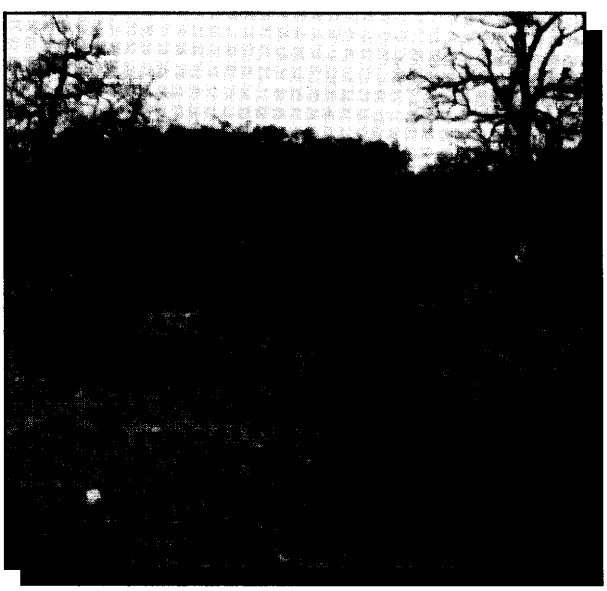

Fig. 6. Mature stands of ashe juniper are critical nesting habitat for the golden cheeked warbler. Control of juniper in some areas may be prohibited under the Endangered Species Act.

Fig. 7. Most wildlife area resource shared among several landowners.

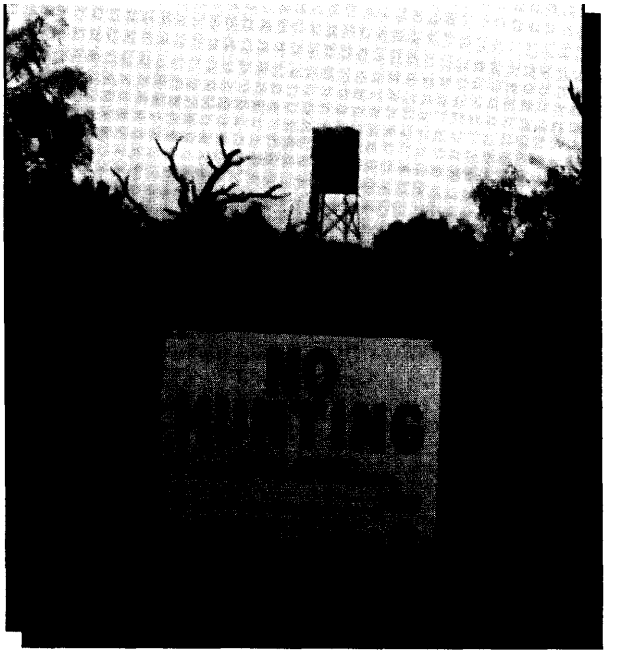

Fig. 8. Placing hunting blinds naar property lines may cause ill feelings between neighbors and is not an ethical practice.

Many people like to use artificial feeders to attract animals for viewing and/or hunting. Hardly anyone objects when feeders are used to attract nongame birds such as hummingbirds or songbirds. But when feeders are used to bait game animals such as deer from one person's property to another, hard feelings between neighbors may arise. Also be aware that hunting migratory gamebirds such as doves over baited areas is a state and federal offense. If you have questions about what does or does not constitute baiting, contact your local game warden.

The necessity of managing wildlife as a "shared" resource makes that management more difficult. Real estate advertisements commonly read "40 acres bordering large ranch, lots of deer and quail." Sometimes the owners of such small acreages put out corn to attract deer from the neighboring property. In extreme situations, there may be more deer taken from this 40 acres than from an adjoining 4,000 acres. Such excessive hunting is surely not a good neighbor policy, and does not embody a good conservation ethic. Another questionable practice is erecting hunting blinds adjacent to property lines or fences (_Fig. 8).

Most people who live in the country want to be a respected part of the community, so good neighbor relations are important. Make an effort to become acquainted with your adjoining landowners and discuss your game management plans with them. They may be willing to join forces with you, thus making for a more viable management unit.

Sometimes several landowners can work cooperatively towards game management goals that would be impossible to achieve acting individually. These groups, sometimes referred to as "wildlife management associations" or "co-ops," rely upon the voluntary compliance of their members with a given set of management guidelines. Such group efforts have been successful in improving deer management in areas such as the Texas Hill Country. For more information on the structure of such programs, ask your county Extension agent to show you the videotape "Form and Function of Deer Management Associations."

Another problem regarding wildlife on small acreages is the large number of domestic dogs and cats that are allowed to roam in such areas. Housecats can be one of the most serious predators of songbirds and quail. Free-ranging dogs often disturb or destroy nesting birds and young animals. Roaming dogs sometimes cause problems with nearby livestock operations, especially sheep and goats. Even though you're in the country, it's still best to keep your pets confined to the yard at all times.

Ethical Animal Management

Landowners who own livestock have responsibility for the ethical management of their livestock. This involves providing the animals' basic needs for food, shelter, health and welfare.

Welfare and Health

Public awareness and concern for the welfare of animals continues to increase, placing livestock production under close scrutiny. Because most small acreages are close to urban areas, these landowners play a critical role in the animal welfare issue. The only exposure many urban dwellers have to land and livestock management is what they see as they travel to and from the city.

Therefore, the small scale livestock producer must practice ethical animal management.

Seldom can the small acreage landowner afford or justify the expense of the kind of facilities required by larger livestock production enterprises. Although facilities suited to small acreages need not be elaborate or expensive, they should be neat, clean and safe for both livestock and humans. Neatness and cleanliness are imperative for human safety and show a concern for animal well-being. Barbed wire, exposed nails, splintered lumber, loose wire, sharp edges and corners of metal roofing, etc., have no place in an animal handling facility. Fences, especially those on the perimeter, must be well maintained for animal and human safety. As the old saying goes, "Good fences make for good neighbors."

Certain facilities are essential for ethical livestock management. These include a small pen for collecting livestock and a means of securely restraining larger animals (cattle, horses). Such facilities can be constructed with ready-made livestock panels, lumber, welded wire panels (with mesh no larger than 4 inches square), woven wire or a combination thereof.

A source of clean, fresh water should be available to livestock at all times. Water storage tanks should be easy to drain and clean. Leaks and run-over should not be tolerated. Water puddles are easily contaminated and foster the growth of internal parasites and disease organisms.

If possible, animals should be fed from troughs or tubs. Feeding animals on the ground in small areas makes it easier for internal parasites and diseases to be transferred from one animal to another. Although feeding above ground level will not eliminate health problems, it will certainly help.

Shelter is also essential for the proper care of livestock. Although an animal maybe comfortable during adverse weather, passersby may perceive the absence of shelter as animal abuse. Trees and shrubs provide excellent shelter and shade for livestock. If there is no natural shelter, shelter facilities should be built to protect livestock from wind and rain during the colder months and from mid-summer heat. Shelter is most critical for young animals.

Nutrition

Like humans, animals have a satiety factor which regulates how much and when they eat. Basically, when animals feel full they stop eating. Since small acreages often have little forage, the public may perceive animals in such areas to be hungry. Actual signs of hunger include animals reaching through fences to graze; high, well defined browse lines on trees and shrubs; and animals removing bark from trees and chewing on boards or fence posts (Fig. 9).

If sufficient standing forage is not available, the animals' "fill" requirement must be met with supplemental forage. Supplemental forage comes in several forms; the most convenient, easy-to-handle form is hay. High quality hays such as leafy alfalfa and fertilized, immature bermudagrass can meet the nutritional requirements of most mature animals. However, growing animals, animals fed poor quality hays, or animals grazing dormant forages often need additional nutrition.

Fig. 9. While chewing on fence posts, trees and wood fences may result from boredom, it can also be a sign of hungry animals.

The four primary nutrients needed in a supplemental feeding program are protein, energy, minerals and vitamins. Nutritional deficiencies often involve two or more of these nutrients. For that reason, a single feed seldom supplies all the nutrients required.

Oilseed meals (soybean, cottonseed, peanut meals) and alfalfa hay are high quality sources of protein.

Cereal grains (corn, mile, wheat, barley, oats) are excellent sources of energy, but are low in protein and minerals.

Although mineral supplements are the most expensive (dollars per pound) part of a supplemental feeding program, a mineral supplement should be available free choice at all times. Livestock eat only a few ounces of mineral supplement per head per day. Therefore, the benefits gained from mineral supplementation outweigh the expense.

Ruminants (cattle, sheep, goats, deer) can synthesize all the required vitamins except Vitamin A. Vitamin A is provided by green forages and fresh, well prepared hays. In contrast, horses often require vitamin supplementation for maximum performance.

It is not recommended that small scale livestock producers formulate their own supplemental feeds, because:

- It is difficult to determine the ingredients in and nutrient composition of various feeds, and without that information the formulation won't be accurate.

- Few small acreage owners have enough knowledge of animal nutrition requirements.
- Not all feedstuffs are acceptable for all species of livestock.

For these reasons, small scale livestock owners should rely on commercially prepared feeds and supplements which usually can be matched to the livestock species and expected level of performance.

Summary

Concern for the environment increases every year. Both rural and urban Texans care about the proper use of land, water and wildlife. Since small acreage landowners collectively control hundreds of thousands of acres of Texas land, the ethical management of these small properties will:

- sustain the use of our natural resources;
- strengthen the ties between urban and agricultural communities; and
- improve the quality of the environment for future generations.

For Assistance Contact

land

Texas Agricultural Extension Service
Soil Conservation Service
Agricultural Stabilization and Conservation Service

Livestock

Texas Agricultural Extension Service
Local veterinarian
Local livestock feed and supply retailer

Wildlife

Texas Agricultural Extension Service
Texas Parks and Wildlife Department

Suggested Additional Reading Available From Your County Extension Agent

Livestock

Adapted Grasses for Texas Pastures, L-2204
Feeding and Storing Hay, L-2201
Feed Label Information, L-2163
Forage Species for Texas, L-2205
Mineral Recommendations For Pastured Beef Cattle In Texas, L-2213
Nutrient Composition of Feeds, B-1553
Nutrient Requirements of Beef Cattle, B-1554

livestock Stocking Rates

Balancing Forage Demand With Forage Supply, B-1606
How Much Forage Do You Have, B-1646
Range Condition: Key To Sustained Ranch Productivity, L-5024

Weed and Brush Control

Brush Control For Small Acreages, L-2227
Brush Management Methods, B-5004
Chemical Weed And Brush Control - Suggestions For Rangeland, B-1466
Key Browse Plants of the Edwards Plateau Region, L-2371
Key Browse Plants of the Trans-Pecos Region, L-2372

Wildlife

Bobwhite Food Development, L-1665
Bobwhite Quail Management in South Texas, B-5005
Brush Management Effects on Deer Habitat, L-2347
Factors Affecting Deer Diets and Nutrition, L-2393
Form and Function of Deer Management Associations, Videotape
Interpreting Deer Harvest Records, B-1486
Texas Deer Management Calendar, L-2376
The Texas Deer Lease, L-2334
Supplemental Forage Management for East Texas White-tailed Deer, L-2457

Issued in furtherance of Cooperative Extension Work in Agriculture and Home Economics, Acts of Congress of May 8, 1914, as amended, and June 30, 1914, in cooperation with the United States Department of Agriculture. Zerle **L. Carpenter, Director, Texas Agricultural Extension Service, The Texas A&M University System.**
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