

The Range Livestock Industry in Texas

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It may come as a surprise that at least some Texas tall tales have basis in fact. Several of the facts relate directly to the Texas livestock industry.

Most people know that Texas is the second largest state of the U.S., after Alaska, and the largest of the contiguous 48 at 120,756,300 acres. Of that figure, only 1.76% or approximately 3 million acres is federally owned. Only 703,193 acres is in national forests and grasslands with most of the remainder being military reservations.

Of the non-federal land, 405,913,700 acres or 57.9% is rangeland, which is almost one fourth of the privately owned rangeland in the U.S. Another 20.2% or 421,402,500 acres is in cropland and 10.3% or 133,310,600 acres is pastureland, all of which combine to support major breeding, growing, and finishing segments of the U.S. livestock industry.

Texas ranks first nationally in numbers of all cattle, beef cattle, cattle on feed, cattle slaughtered, sheep and lambs, wool, goats, and mohair. Cash receipts from livestock and their products totaled \$5.5 billion in 1983.

Thought of as rural, Texas is the third most populous state with 3 of the 10 largest cities in the U.S. and 80% of its population living in 29 Metropolitan Statistical Areas (MSA). While 50% of the people live in the three largest M.S.A.'s, the other urban centers scattered across the state have often-overlapping circles of urban influence which maintain land prices far above agricultural values. It is not unusual for grazing land to cost \$3,000 to \$6,000 per animal unit. These land costs place tremendous pressure on multiple use resource management for maximum net return. Also, recent political redistricting ended a rural majority in the Texas legislature that had enabled favorable agricultural land use tax evaluations, sales tax, and workmen's compensation exemptions for agriculture.

Water is both a major resource and a growing problem for the state with increasing impact on livestock operations. There are 2,992,700 acres or 1.75% of the total area of Texas covered by surface water with 13 major rivers among 3,700 streams identified in the state, thousands of man-made stock ponds, numerous upstream flood prevention projects constructed by the U.S.D.A. Soil Conservation Service, and major flood control reservoirs constructed by the Corps of Engineers.

Together with surface water, the Ogallala and Carrizo-Wilcox aquifers support 9,760,800 acres of irrigated cropland, while other less productive aquifers are important sources of domestic and livestock water. Significant points are that 37.5% of the state's total annual water budget is lost to transpiration of non-economic plants, mostly invading

brush, and there is an evergrowing competition between rural and urban factions for use of available water.

A land mass spanning more than 10 degrees of latitude and 12 of longitude creates a multitude of capabilities and limitations with corresponding variations in opportunity and operation. Annual rainfall varies from less than 8 inches on the West to nearly 60 inches on the East, elevation from sea level to more than 8,000 feet, and growing season from 341 days in the South to 178 days in the North. Add in 10 described vegetational areas, ranging from semi-desert rangelands in the West to semi-tropical forested range in the East, and the folkways of 7 ethnic groups to provide diversity seldom seen within one state. Real mountains and lingering snow are about the only possibilities lacking.

Early History

So much for statistical background. "Come back with us now to those thrilling days of yesteryear" for a brief look to understand how we got to be the way and place we are. We are so much victims and beneficiaries of our past that present understanding and future performance depend a great deal on Winston Churchill's admonition that "those who fail to study history are doomed to live it over."

The history of the Texas livestock industry dawns about 1530 with the coming of the early Spanish explorers. These adventurers included not only military personnel, but also religious persons dedicated to establishing missions to educate, civilize, and religionize the native population, many of whom were not too enthusiastic about any of the above, and some of whom resisted forcefully. More often than not, these missions were built as, or were accompanied by, a presidio or fort for protection.

It was common for the explorers to be accompanied by livestock, including horses, cattle, sheep, and goats, meant to sustain the expedition and provide breeding herds for the missions that subsequently were to be established. The Andalusian cattle that strayed from these missions or were liberated by those who had not fully understood the word or seen the light became the progenitors of what were to become vast herds known as Texas Longhorn cattle.

The civilization or at least colonization of Texas became a seesaw pattern of exploration, mission establishment, retreat and retrenchment, reestablishment, and further expansion for nearly 300 years. The ebb and flow was affected by variations in Spanish colonial policy and implementation, internal personnel problems, and external incursions by hostile Indians from the North and West and French from the East.

By the mid 1750's, ranching was the mainstay of the Texas economy. Ranchers were plagued by Spanish government policy which directed trade goods from Spain through Mex-

ico to Texas with tariffs added all along the way to become prohibitively expensive at destination. The Texas rancher's market outlets were limited to the army, the missions, and the very few colonists. The French to the East provided the best market for Texas cattle and horses with low-cost trade goods in return. Since trade with the French was strictly forbidden by the Spanish government, a lively smuggling trade arose. Bowing to the inevitable, the Spanish king in 1780 granted a concession to allow legal livestock trade with Louisiana.

Prior to 1820, foreigners were prohibited from colonizing Texas, but in that year the Spanish colonial government of Mexico passed a law that welcomed foreigners into Texas, if they pledge allegiance to the Spanish monarchy and constitution. This law not only legalized the inevitable invasion of Americans, but also recognized that many years of attempts to colonize Texas from Mexico had resulted in pitifully few settlers.

After Mexican independence in 1821, the new government continued with some variations the Spanish practice of granting land to empresarios who brought emigrants to establish colonies in Texas until 1830. Then concern for too much American influence again barred Anglo-American immigration, encouraged Mexican and European immigration, and placed Texas under martial law to head off American influence.

The ruggedly individualistic Anglo-Americans chafed under such restrictions and began the difficult fight which resulted in an independent Republic of Texas in 1836 and in annexation to the United States in 1845. Texan's independent streak was asserted even then in retaining certain rights to division or secession which remain to the present.

Evolution of Production and Marketing

A major chapter in the Texas livestock industry came following the War Between the States, when not only war-weary Texas veterans but also many from other southern states returned to find their farming and livestock operations in disarray. The number of Longhorn cattle roaming Texas had increased dramatically during the great distraction and served as live bait to innovative entrepreneurs seeking opportunity. The resulting operations ranged from sedentary livestock farming operations to much more mobile enterprises chiefly requiring endurance, certain skills, one or more fast horses, and a long rope. Presently, Interstate 35 from Oklahoma to San Antonio and I-37 South to Corpus Christi afforded an approximate demarcation between predominately livestock farming to the East and range livestock operations to the West.

Production always has proven easier than finding profitable markets. Early on, the major use of cattle was for hides and tallow with the best markets at the Texas Gulf Coast ports of Indianola (later obliterated by two killer hurricanes) and Galveston. There, water provided transportation to markets worldwide, including the cargo of hides and tallow described in Dana's *Two Years Before the Mast*.

Later, beef became an increasingly valuable product, and still dependent on water transportation, the river markets such as St. Joseph, Missouri, became the best market and destination for trail drives of cattle from Texas. Expansion of the railroad system to Abilene and Dodge City, Kansas, pro-

vided the next lucrative markets and destinations until the combination of barbed wire and fear of Texas tick fever halted drives north in the late 1880's. By that time extension of railroads into Texas took the place of the drovers.

It is interesting to note that the early drives in the 1860's and 70's were of beeves, 4 to 5 year old steers ready for slaughter, while some later drives in the 80's were of cows to populate the North Plains and Intermountain regions. As these came into production, the North Plains stockmen may have used the health threat of tick fever effectively to embargo interstate movement of Texas cattle, a tactic widely and successfully used by states and nations ever since to protect their market, with various diseases from brucellosis to bluetongue as the rationale.

A national rail system and the advent of refrigeration contributed to the development of 12 major terminal markets across the country with associated packing facilities to take advantage of the concentration of livestock at central facilities. Texas was served by San Antonio and by Fort Worth, which became one of the largest cattle markets and the largest sheep market in the U.S.

The next shift in transportation and marketing came with widespread development of paved public roads during and after World War II and trucks and trailers to use them to the best advantage. The result was dispersion from terminal markets to local auctions, where producers could haul their own livestock at their convenience, watch them sell, and take the check home or spend it on the way. There now are 157 auction markets in Texas, many with insufficient volume of livestock and buyer competition to bring top dollar, but preferred by many producers for convenience versus profit. Amarillo now has the largest cattle auction and San Angelo the largest sheep market in the U.S. Electronic marketing methods, including video marketing via satellite, are the latest innovations. A recent video auction handled 48,000 cattle.

Impact of Feedlots

When irrigated farmers in Arizona and California overproduced the cotton market in the late 1940's, they turned to barley and milo as alternate crops and fed native cattle as a market outlet. Soon, feed grain production outstripped the supply of local cattle available, and numbers of cattle were imported from other states, especially Texas. Demand for beef, especially from California, still exceeded the supply of local feed grain produced in the early 1950's.

By the late 1950's, Texans finally woke up to the fact they were sending both cattle and grain to the desert Southwest for feeders there to profit, while the Texas High Plains had both ingredients at home with a more favorable climate to boot. Thus the Texas cattle feeding industry was born and, with the impetus of center pivot irrigation systems to add acres not suitable for surface irrigation, spread northward to Nebraska to form a vertical "Beef Belt" across the plains.

With these large concentrations of slaughter cattle available, the packing industry abandoned antiquated multi-story, multi-species packing plants at the terminal markets to build ultra modern and efficient plants in the plains states and buy finished cattle directly from the feedlots. When supplies of feeder cattle became limiting in the late 1960's

and early 1970's feedlots integrated backward to own stocker cattle on rangeland and wheat pasture.

The unprecedented demand for feeder cattle to consume and market surplus grain from irrigated production, together with exhortations from the U.S. Department of Agriculture in the earliest 70's that we could never again produce enough red meat to meet needs, contributed to an increase in cattle numbers that broke the market in 1974. In all but one of the years since, calves could be bought for less than the cost of production. The result has been a marked attribution of cow-calf producers and a shift by others partially or completely to stocker grazing programs accompanied by the slaughter of unusually large numbers of breeding females. Now, cattle numbers are at the lowest figures since the early 1960's, and prices are moving back toward more profitable levels.

A trend in marketing is for larger ranches to sell at private treaty directly to stocker operators or feedlots or through order buyers to them, rather than through public auction markets. Another trend is for ranchers to retain ownership of home-raised and purchased cattle and have them fed on a custom basis in commercial feedlots.

Breeds and Types

The cattle on Texas ranges have changed markedly over time. The hardy Longhorns were the result of natural selection for survival to produce and reproduce without supplemental feed in hot and cold with built in resistance to insects and disease and able to travel long distances on foot if necessary. A great yearning, if not need, to get them fat enough to improve palatability at an earlier age led to the introduction of Durham or Shorthorn, Angus, and Hereford cattle from the British Isles.

The Durham bulls were first to be widely used on Longhorn cattle, followed by an even larger number of Herefords, which proved to be hardier under range conditions. Only in later years and smaller numbers were Angus used on the range, primarily for their earlier grading characteristics. When introduced to the heat, humidity, and insects of the Gulf Coast, cattle of British breeds died in droves, and the survivors did not prosper.

Beginning with an importation in 1906, the introduction of Asiatic breeds better adapted to this environment developed over time into the American Brahman breed, which popularized cross-breeding for more efficient production under these conditions. Crossbreeding received additional impetus during the 1960's when Hereford breeders began to breed their first-calf heifers to Angus for easier calving and found their crossbred calves outgained the purebreds from mature cows. The "black baldies" went on to perform better in the feedlot and to make superior mothers in the pasture. Research proved the value of heterosis and complementarity in production efficiency. Extension educational efforts and additional favorable experience popularized the practice.

Performance testing for rate-of-gain changed breed types from the short and blocky, belt-buckle-high cattle that won shows in the 1950's because of their ability to finish at a light weight into longer, taller cattle that produced more lean and less fat at a given weight. Emphasis on gain accelerated interest in Continental breeds, headed by French Charolais

imported to Texas through Mexico many years ago and followed rapidly in the 1970's by Simmental and a host of others up to the extreme size of Chianina. After spurts of popularity due to novelty and scarcity, the numbers of each breed and percentage in crosses is settling out according to their commercial production efficiency, marketability, and economic contribution.

Sheep, Goats, and Wildlife

There is very little Texas rangeland that has not been grazed by sheep at one time. Texas sheep numbers peaked at 10 million head in 1940 and after a second peak in 1950 related to the Korean War, have declined fairly steadily to approximately 1.8 million presently. Goats have declined from 3.3 million in 1940 to about 1.5 million now, including both Angora goats for mohair and Spanish goats for meat production.

Production of both sheep and goats is now concentrated in range flocks of the Edwards Plateau region of Texas and in decreasing numbers from there outward with only small farm flocks in other areas of the state. Major reasons for that concentration are the combination of grass, forbs, and browse available as forages, the favorable climate, low numbers of predators, markets, and shearing crews available.

There is ample evidence that efficiency of rangeland harvest can be increased by about 25% by using multiple species versus any one species of livestock. Additional benefits are control of some undesirable plants and increased income with diversification of sources and timing that can add significant stability to ranching enterprises. Predators and prejudice are the greatest deterrents to increased sheep and goat production. The preceding statements could apply equally to range wildlife and exotic animals which have become a significant source of ranch income, as well as providing aesthetic and other recreational values.

Animal Health

Animal health must be a major concern to the livestock industry. Texas has led the way in controlling pyroplasmosis, hoof and mouth disease, and the screw worm—all in cooperation with Mexico, but not without major expense and inconvenience to Texas ranchers in providing a buffer zone for safety to other U.S. producers. Efforts to control brucellosis have been successful from West to East in proportion to rainfall. Progress is more rapid now with improved programs.

Organizations

Texas has been blessed with one of the strongest teams of livestock, range management, and conservation professionals in the world. The Texas Agricultural Experiment Station, the Texas Agricultural Extension Service, a host of public and private universities engaged in research and teaching, and the U.S.D.A. Soil Conservation Service (with 89 personnel designated as range conservationists and many in administrative assignments from a range background) all work together with the 14,000 member Texas and Southwestern Cattle Raisers Association (now in its 110th year of service), the Texas Sheep and Goat Raisers Association, and the Texas Association of Soil and Water Conservation Districts to mutual advantage and public benefit. The Texas Section

of SRM is the largest in the society with more than 700 members, 22% of whom are ranchers. These working relationships have been very pleasant and productive.

Texas has Research and Extension Centers headquartered in each geographical region of the state with a team of workers to address regional concerns and network with their colleagues in other regions on a statewide basis. The Texas Experimental Ranch at Throckmorton, established in 1961, is a unique effort in which land and cattle are furnished by the Swenson Ranch, personnel and funding by the Texas Agricultural Experiment Station, and oversight and some funding by area ranchers. The Extension Service has given national leadership as well as concerted implementation within the state to Integrated Resource Management and the Grazing Lands and People project.

Rangeland

What then of the Texas rangeland that supports the industry and infrastructure previously described? Strong points, other than those already mentioned, would be headed by the sense of individual, personal stewardship of privately owned lands without public lands as a distraction, in full realization that range management decisions must be made by each individual for better or worse with no one else to blame.

Second would be longtime attention to and use of planned grazing systems, controlled grazing, or by any other name as sweet. Led by Dr. Leo Merrill, who developed the Merrill 4

pasture deferred rotation system in use since 1948, Texas ranchers with the assistance of their advisors have applied that and other forms of deferred-rotation grazing, high intensity/low frequency, and short duration grazing to an extent seldom seen in other states. In addition, tremendous amounts of their own money have been invested in cross-fencing, water development, and brush control.

The weakest point would be failure to adjust numbers of livestock to forage available in a timely way that would prevent overgrazing, loss of vigor and production, and related invasion by undesirable plants. The right stocking rate for the conditions and grazing method being used still is the key to success or failure of all other practices employed and is the most effective form of risk management known.

What is the future? If the remarkable potential for production and profit from Texas and all other rangelands is to be fulfilled, we must learn and then apply all of the principles of total resource management and marketing in an integrated operating plan that is ecologically and economically sound and flexible enough to adjust to rapidly changing conditions. The caliber of producers and their management is rising rapidly by a tough economic culling process. The caliber of supporting research, education and input products must rise likewise if we are to survive, contribute, and succeed together. The world's renewable natural resources and consumers of our products and services will be the principal beneficiaries of our efforts and results.

Do You Need Meeting Space for the 1988 Annual Meeting in Corpus Christi, Texas?

If you have not done so, make arrangements for meeting space for your committee or function by December 15, 1987. It will appear in the program to be provided at the meeting. Please contact Sam Beasons, Caesar Kleberg Wildlife Research Center, Kingsville, Texas phone: 512/595-3922. Meeting space will be at a premium particularly on Sunday and Monday, so don't wait. We plan to please but don't expect miracles at the last minute.