Agriculture Made New Mexico Possible

By Ree Sheck

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Early in 1976, President Gerald W. Thomas, of New Mexico State University, initiated a Bicentennial Agriculture Project to pay tribute to New Mexico's agriculture and its importance in today's economy. This publication is part of that project.

Also in this project were an antique farm-equipment exhibit, a 50-foot portable display, county booths by the Cooperative Extension Service and the 4-H and FFA clubs, and a mass media program that includes a condensed brochure, messages on grocery bags, egg and milk cartons, and press, radio and television releases.

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Man and a Land That Gives No Quarter

A mid-nineteenth-century traveler passing through New Mexico just after it had become a territory of the United States described it as the "most ancient country I have ever seen, and [it] looks as though it might have been worn out long before the rest of our earth was made."

What he was seeing was a land different from his more verdant East. A hard land, a dry land that would through the generations test the mettle of those who would live from it. The land the uncomprehending traveler saw as wild and barren had been tilled by early farmers long before he was born. It had already provided sustenance for not only the Indian but the Spaniard and the Mexican, and would continue to produce for the New Mexican, now a part of the United States. The land, far from worn out, yielding food yesterday, today and tomorrow, is New Mexico's renewable resource.

The history of the state has been the story of man's use of that continuing resource. When those first farmers were planting their crops of corn and squash thousands of years ago, only a small portion of what would become New Mexico was in use. Today most of the land is in agricultural production - in farms, ranches, and timberlands. It is estimated that money generated by agriculture in New Mexico exceeds $1 billion a year.

Agriculture made settlement in New Mexico possible, and while an increasingly smaller percentage of people live on farms, more people than ever before have a hand in what is produced, processed, bought, and sold. The marketing process today involves every one of us. As the popular bumper sticker proclaims, "If you eat, you are involved in agriculture."

The public wants lean meat, so researchers and livestock men strive to produce faster growing, leaner cattle, sheep, and swine. A nation of people that used to eat potatoes and beans now also wants artichokes and asparagus, and they want them year around, not just during local growing seasons. Transportation and technology have created a huge market where products from farms and ranches in New Mexico must compete with those in California and New York and sometimes around the world. Industries have been created to get food to the table, feed to the livestock, and fiber to the processing plants.

All those industries and all of the marketing apparatus still hinge on the product from the farm and ranch. In New Mexico, they hinge now, as in the past, on what man can wrest from the land itself.

Agriculture in arid New Mexico, where rainfall averages 13 inches a year (ranging from a high of 40 inches in the mountains to 8 inches in lower regions), has of necessity taken a different path than that of the more humid eastern U.S. where the country's English colonies began. As the East developed, land became dear, while water was free and abundant. In New Mexico, since its beginnings, land was available, but settlers have been forced to dance to water's tune.

Even before the beginnings of the 13 colonies in the United States, agriculture dominated life in New Mexico. The peoples who have settled its land have brought changes to it. Some have loved it; others have merely used it. The measure of their agricultural
accomplishments has been the degree to which they have adapted to an environment that gives no quarter.

THE SEEDS OF SETTLEMENT

For centuries of prehistory, bands of people traversed the land that was to be New Mexico in search of food. They hunted wild animals and they ate plants grown wild - fruits, nuts, and berries. They traveled on foot; their only domesticated animal was the dog.

Through generations of discovery before the Christian era, they found that a seed put in the earth would give a new plant bearing more seeds. It was called maize, or corn. The beginnings of plant cultivation meant that man could cease his constant wanderings in search of food. He still hunted and gathered from native plants, but the yield from what he planted and cared for gave him a hedge against hunger, a security he had never had before.

Some of the people gave up their nomadic ways and became gardeners, eventually growing corn, beans, and squash. They also cultivated, or at least encouraged, other food plants such as sunflowers, wild potatoes, and tomatoes.

Beginnings of Irrigation

There is evidence that the Cochise peoples were harvesting primitive corn in New Mexico by 4000 B.C. and squash and beans by 3000 B.C. By 2300 B.C., the Mogollon Indians in the Gila River drainage system of southwestern New Mexico were practicing rudimentary horticulture. While their ancestors had depended on rainfall to nourish plants, they developed primitive irrigation systems. First, they probably carried water by hand to each individual plant. They gradually learned to collect rain water from scooped-out basins in the rock and began to plant where seasonal flood waters ran. They built small stone dams in gullies to catch run-off.

The Anasazi in northern New Mexico became agriculturists about the first century, growing squash and a different strain of corn from that of the Mogollones. As the Pueblo culture began to develop about 700 A.D., irrigation techniques became more sophisticated. These early farmers had learned, as would all who followed, that conserving water was a vital part of agriculture in this dry land. They built ditches that channeled river water to their crops and used controlled flood waters. Largely through their ingenuity in irrigating, the Pueblo Indians, almost 1,000 years ago, had brought under cultivation some 25,000 acres along the central and northern Rio Grande and its tributaries.

To former crops they had added pumpkins, native onion, mustard, and potatoes, a crop which was not grown in the English colonies of North America until 1719. Their most important new crop was one which has been of great importance to New Mexican agriculture in this century - cotton.
A Life of Subsistence

All of the work in the fields was done by hand using the simplest implements. Planting was done by digging a hole for seed with a stick, and the farmer cultivated with a sharpened stick. His crops stood in long rows that stretched out to meet the river. Land belonged to the community, with small plots allocated to each family for their use.

Corn continued to be the staff of life. It was ground for bread or tortillas, piñole, or hot mush. It was boiled or cooked over charcoal and eaten off the cob. Pumpkin was cut in strips, and dried for future use. For as surely as the farmer had learned to cultivate the land, he had learned that it would not always share its bounty. Floods could wash away his fields, long droughts could dry up the river beds, hail could take his harvest. He stored what he could for meaner times.

For hundreds of years the Pueblos continued their agricultural life along the water's edge, trading occasionally with people from lands to the south or north who sought their corn or cotton in exchange for hides, dried meats, and tallow. Theirs was a civilization of subsistence. That is how the Spaniards found them when they reached New Mexico in the sixteenth century.

SPANIARDS BRING NEW CROPS AND LIVESTOCK - 1540 TO 1821

Imagine the strangeness of that scene in 1540. The first large expedition of Spanish explorers made its way north from Mexico to the domain of the Indian farmer. Francisco de Coronado entered the land on horseback, and he drove with him large herds of cattle, sheep, and goats to feed his men.

To the Indian who had hunted in the wild for his meat, traveling always on foot, the encounter was one to change his history. Slower to adopt the sheep, goat, and cow, the Indian took to the horse as if it had been made for him, especially the Navajo, Apache, and later the Comanche - the nomads who traded with the Pueblos. Mounted on horseback, the Indian had much greater mobility. He could roam farther and easier for food, so some of the pressures of obtaining food eased. In warfare his tactics changed and he became known and dreaded for lightning-like raids on settlements, an activity which continually hampered agricultural activity in the region until the 1880s.

Coronado, the explorer, introduced livestock to the native farmer, but it was the colonizer Juan de Oñate who was the real founder of the livestock industry in New Mexico as well as in the entire West. When he came in 1598, he was under contract with the Spanish government to bring into the province of New Mexico 1,000 head of cattle, 3,000 ewes, 1,000 rams, 150 mares, 150 colts, 100 hogs, and 1,000 goats. The animals that survived the journey from Mexico came into an arid land suited to grazing. They began a livestock industry that year after year has provided the largest single source of agricultural income in New Mexico, and it was begun a full generation before Plymouth Rock became a part of United States history.

Sheep Provided Food and Fiber

The Spaniards brought more sheep than any other animal; the sheep adapted well to New Mexico's range land. They were raised for both wool and mutton, with mutton much preferred over beef by those early settlers. The wool of the churro breed brought to the New World was inferior to that of the fine Merino sheep which Spain guarded within her Iberian
boundaries in order to monopolize world wool trade. The churros were very small, producing as little as one pound of wool per fleece, but they were hardy and their coarse wool was excellent for blankets woven by Spaniards and Indians. It is still debated whether the Spanish took sheep with them to St. Augustine, Fla.; it may be that New Mexico's sheep were the first in the United States.

The cattle industry during Spanish colonial days was minor; in fact, cattle were not important in New Mexico until after the U.S. Civil War. One early observer described the cattle raised in the province as "scrubby, thin-flanked animals that ran to horns and legs instead of beef." But the Spanish cattle, a rangy type of longhorn, were tough enough to survive the perils of the New Mexico climate.

Goats fared well on native vegetation, and they were perhaps the most totally suited and totally efficient of the livestock animals, providing milk, cheese, meat, and hides.

Mules were important in New Mexico from the time the Spaniards brought them until well into the nineteenth century. They were unparalleled as pack animals over the rough and expansive land. The horse was not used as a beast of burden and was infrequently used for anything other than riding, with mules and oxen serving as draft animals for the few primitive carts and plows province. Burros were the chief riding animals of the peasants.

Improvements in Primitive Farming

Farming was essential in the small northern outpost of the Spanish Empire. Far from any kind of trade area, what was eaten had to be grown nearby. There was no surplus of fresh produce, and there would have been no market for it. The agriculturists grew for their own needs.

The Spaniards added substantially to crops already grown by the Indians. They brought alfalfa, wheat, fruit trees, sugar cane, grapes, chile, legumes, and melons. Some of these, such as chile, were not indigenous to Spain but had been discovered by them in other parts of the New World. Major crops during the more than two centuries under the flag of Spain were corn, beans, and wheat.

Like the Indians, the Spaniards settled along the waterways and irrigated their crops. Ditches were expanded and enlarged with a system developed through the years for use of the water. Landowners along the ditches had to supply workers to maintain them during the year, and they were entitled to so much water on a schedule supervised by a jointly hired ditchmaster. Flood control work was begun to prevent loss of crops planted along the river banks.

Farm implements remained crude, though the hoe supplanted the Indian digging stick. Spain's farmers were using iron implements, but this poor northern colony saw few of them - only the wealthy had oxen-drawn plows.

Colonists usually planted small farm plots near their settlements, with the Pueblo Indians continuing to farm their own lands and providing food for the Spanish priests who now staffed mission churches. The government of Spain gave large grants of land to Spaniards who had served her well and who came to develop the frontier land.

While the 13 American colonies were fighting for independence from England, Spanish New Mexico was continuing in the struggle for survival it had waged for more than 170 years. The inhabitants numbered fewer than 3,800 Spaniards and about 12,000 "Christianized Indians," so poor that almost all trade was by barter - cash rarely changed hands. A frontier outpost and missionary center, New Mexico was totally dependent on subsistence agriculture and suffered from a chronic lack of supplies and continual harassment by several hostile Indian tribes.
Markets to the South

Spain prohibited trade between its colonies and the French, English, or Americans so New Mexico's agricultural products, including livestock on the hoof later in the period, were taken south by caravan to Chihuahua, a journey which might take as long as six months. Trading livestock, hides, piñon nuts and woolen blankets for more expensive manufactured goods, the New Mexicans perpetually came out at a disadvantage but there was profit enough to warrant the long trip, and Mexico was virtually their only source of supplies. As many as 200,000 sheep were driven to Chihuahua yearly beginning at the end of the eighteenth century, for which the New Mexican might be paid as much as $1 per fleece. The sheep were sheared there and the fatter ones were sold for meat.

There was also an annual fair at Taos where some Chihuahua merchants would bring goods and where settlers traded with each other and with the Indians. Even warring tribes would come to the fair during times of peace.

The effect of the raids by hostile Indians on the Pueblo and Spanish settlements was devastating in terms of loss of livestock, crops, and human life. It was said that the only reason the Comanches allowed the Spaniards and Mexicans to remain in the province was to raise their horses for them. There was scarcely a farmer who had not had the crops he sowed harvested for him by the raiders.

Yet the land continued to produce and the livestock population grew despite almost total lack of breeding improvement efforts or supplemental winter feeding. At the end of Spanish rule in 1821, agricultural methods had changed little from those of the sixteenth century, but the livestock industry had its start and a small agricultural population (probably fewer than 20,000 Spaniards and 10,000 Pueblos) had proven it could meet the challenges of living off a “worn out” land.

MEXICANS OPEN BORDERS FOR TRADE - 1821 TO 1848

It was 1821 before liberty bells rang in New Mexico and in other Spanish colonies in the New World. For once finding her remoteness perhaps an advantage, the province of New Mexico had been little affected by the wars for independence from Spain going on to the south. Though she greeted news of liberty with enthusiasm after her stingy years with Spain, in the end she found she had merely traded one ruler for another as she came under the yoke of the Republic of Mexico.

The most important change brought about by a new government was a loosening of trade restrictions. For more than 200 years (except for the interruption of the Pueblo Revolt from 1680 to 1692), New Mexico trade and communication had traveled the Camino Real from Santa Fe to Chihuahua and Mexico City. With the raising of a new flag previously closed borders were opened to outsiders, and though the Mexicans imposed stiff import duties, traders from the United States found it profitable to head westward in wagons loaded with goods.

Farmers began growing a small surplus to sell to the “rich American traders,” and they got a better price selling hides to them than they could in Mexico.

Trails from East to West
The 2,000-mile-long Camino Real gradually lost its dominance as the 800-mile trail between Independence, Mo. and Santa Fe came into being. The Santa Fe Trail, as it came to be called, began with Mexican independence. A Missouri trader named William Becknell was on his way to trade a pack train of goods with western Indians when he heard that Santa Fe had a new government - one that would allow trade. He veered from his course in 1821, sold the goods in Santa Fe, and returned the next year with a train of three wagons and 21 men. From then until the coming of the railroads in the 1880s, the trail was a major commercial and migration route. By 1831 there may have been more than 100 wagons making the 10-week trip to Santa Fe carrying goods worth more than $200,000. Not all goods stopped in Santa Fe; some American and New Mexican traders transported merchandise further into Mexico.

It was common for the wagons to come to New Mexico pulled by oxen and to leave pulled by New Mexico mules. The oxen could pull heavier loads but did not stand the journey across the Plains as well as mules. Many an oxen stayed behind to pull a plow. The market for mules continued into the territorial period and expanded to include the U.S. Army.

Sheep grazed on an open range continued to be the major agricultural commodity. An average of 200,000 head were sent south on the annual Chihuahua caravan between 1815 and 1830. Toward the end of the Mexican period, sheep began to be driven west to fill a growing market among California pioneers and western miners. In 1841 the first band of sheep traversed the Old Spanish Trail between Santa Fe and Los Angeles. It is estimated that as many as a quarter of a million sheep and goats grazed valley slopes in the northern half of the state.

Sticks for Plowing, Sickles for Harvesting

Farming was still largely a family enterprise; techniques and equipment remained primitive. The plow used was likely to be no more than the forked branch of a piñon tree, sometimes tipped with an iron cover. Wheat was sown by hand, harvested with sickles, and thrashed by animals treading it on the ground.

Raiding Indian bands continued to hold back agricultural expansion, with settlers left to protect their own land with swords, lances, and bows and arrows. Firearms had been prohibited by both Spanish and Mexican law and the few that surfaced were relics. An English traveler escorted through New Mexico in 1846, just before the U.S. occupation, commented on the guards armed with bows and arrows, lances, and rusty guns. He said to have marched with them through Coventry would have broken the heart of Sir John Falstaff.

Cornfields were sometimes planted in the center of a settlement, and herders at times drove small flocks of sheep and goats into the courtyards of the walled houses to save them from marauders.

Through its almost three decades as a part of the Republic of Mexico, New Mexico functioned more as an unprotected appendage than a fully functioning arm of the country. It got its first taste, however, of people and products beyond its borders and took initial steps into the U.S. marketplace with its own agricultural goods.

CHANGES WITH THE STARS AND STRIPES - 1848 TO 1912

The United States flag that was raised over New Mexico as a result of the United States war with Mexico symbolized new markets for agriculture, more protection than before, more modern equipment, more capital, and a new attitude toward working the land.
The early Spanish settler had brought with him the notion that hand labor—hard, physical work—was beneath a landowner. Though many landowners had not been wealthy or powerful in Spain, once they became men of property in the New World, they assumed the traditional Spanish landowner role leaving work to Indian slaves or to a class of peons that developed. There was little incentive toward modernizing agricultural techniques because of the owner's isolation from actual work and because the old methods served up a subsistence fare.

The settler from the East entered with a different tradition—one that upheld work as honorable. A man put his own hand to the plow on his land and he raised his own livestock. He brought his seed with him when he came and he often brought an iron plow. He also, unfortunately, brought with him ideas about farming that frequently did not bear fruit under New Mexico skies. The landscape of the state is dotted with homesteads that didn't make it.

New Markets for Livestock

Scarcely had the new U.S. flag gone up over the territory when two markets for livestock opened up to New Mexico's ranchers. The California Gold Rush was one, attracting hundreds of hungry miners, and they would pay good prices for mutton. New Mexico sheep were driven over the wild lands between the Rio Grande Valley and California. One long-time sheep man explained the advantages of moving sheep instead of cattle: "Sheep can graze as they go, whereas cattle have to stop to eat. When you bed the animals down for the night the sheep are ready to sleep - cows have to eat." Moving cattle also required more men and men on horseback, while large flocks of sheep could be controlled by a few shepherds and dogs. More than 550,000 head of sheep are estimated to have been driven to California between 1850 and 1860 and they sold for as much as $25 a head.

The second big market for livestock was the U.S. Army, which moved into New Mexico to protect the border even before the U.S.-Mexican War was over. After the war soldiers stayed as a line of forts were built to protect settlers from Indian raiders. Then, as Indians were placed on reservations, the army bought meat to feed them. The Anglo preference for beef in a land of sheep created more interest in raising beef and also started the big imports of beef from other areas, particularly from Texas. It was a long time before cattle would outnumber sheep, but inroads began with the U.S. occupation.

The territorial period saw both the emergence and the decline of the great cattle drives in the West, with their heyday squeezed between the end of the U.S. Civil War and the arrival of the railroads in the 1880s. The drives began in Texas, where there was a surplus of cattle and no buyers, in the effort to move cattle to the north where supply was low and prices good. As one writer put it, the drives were begun to "connect the four-dollar cow with the forty-dollar market."

New Mexico became an importer of beef with herds moving across eastern boundaries from Texas. Some of the men came to stay and vast cattle ranches appeared on the eastern side of the territory. Drives before the Civil War had been west to California and, on a lesser scale, east to New Orleans. The big drives to the railheads to supply beef to the eastern United States lasted less than two decades. Then as railroads came nearer to grazing land, longer drives were not necessary and towns sprang up around the railheads as they stretched across the land.

Railroads Bring More People
The rails over the territory brought not only an immense change in marketing of livestock but a jump in population as farmers followed the tracks, encouraged by the railroads, to take advantage of Homestead Act allotments. The territory's population multiplied between 1880 and 1912 from less than 120,000 people to more than 327,000.

The long, clear stretch of the land fascinated these homesteaders accustomed to grubbing out tree stumps in timbered lands. One said, "I could start a plow point into the soil and turn a furrow 200 or 300 miles long without a break." The land kept silent at that knowing a 200-mile furrow would not unlock its wealth. The eastern farmer would learn for himself from days in the hot sun under cloudless skies.

Frequent Indian attacks persisted into the 1870s, and it was not until the capture of Geronimo in 1886 that the armed conflict was finally ended. An army report for the years between 1846 and 1850 gives some idea of the impact on the individual farmer and rancher. During that time 453,293 sheep were lost to the Apaches alone, 12,887 mules, 7,050 horses, and 31,581 horned cattle.

The Butterfield Trail from St. Louis to San Francisco crossed the southern part of the territory in 1857 bringing not only the mail, but people from the eastern part of the continent. The travelers saw a strange and mysterious land they had heard little about. But by 1869 the telegraph spanned New Mexico, and by the 1870s the railroads were surveying the territory and exploring for water.

Windmills, Artesian Wells, and Dams

Railroads in the West are generally credited with first bringing Windmills into use. To get water for the locomotives as they traveled across the arid stretches and for the towns they hoped for along rights-of-way, railroad companies explored for untapped underground water reserves. The windmill was a fairly inexpensive way to bring the water to the surface mechanically. It was only a matter of time until the farmer and rancher made use of the precious water discovered and put the windmill to work for agriculture.

The farmers who followed the push of the railroads settled in the newly opened land with high hopes. But they found that the Washington-dictated allotment of 160 homestead acres was illogical for this land - too much to irrigate and too little for dryland farming. They managed to hang on during the first years of average or above-average rainfall, but when the fingers of drought closed over the land, many were forced to move on.

Sometimes it was the one or two acres irrigated by the windmill that allowed the homesteader to hang on when others had to leave. The windmill also enabled the rancher to plant a vegetable garden for family food supply. Earthen windmill-fed tanks permitted fencing of pastures - as long as the wind blew, the sheep and cattle had a continuous supply of water. Windmills allowed ranchers to bring the water to the grass.

With the increase in population and the ability to farm away from irrigated valleys came competition for upland ranges that had belonged exclusively to long-time ranchers, many of them holding the land by inheritance from grants made during Spanish rule. The so-called range wars were in New Mexico not so much fights between cattlemen and sheepmen, especially since most of the big ranchers ran both cattle and sheep, but a struggle for land between those using it and newcomers who wanted it. Recent arrivals also fought among themselves for a piece of that "worn-out" land.

In spite of the Hollywood version, this was not a time when small sheep herders came in to compete with powerful cattle ranchers for water and land. Sheep had been here for 250 years,
peaking in 1882-83 at more than five million head. Cattle did not pass the million mark until around the turn of the century.

Artesian water discovered in the Pecos Valley in 1888 brought a new stream of immigrants, and other underground water was tapped for irrigation. For the first time irrigated farm land expanded beyond lands adjacent to streams and rivers. By 1900 there were 203,000 acres of land irrigated from rivers and streams and 1,004 acres pump irrigated from underground sources.

Where irrigation was not feasible the farmers who managed to hang on gradually learned new dry-farming techniques. Dryland farming does not mean farming without water but making the most of limited rainfall through conservation, use of drought-resistant seed, and moisture-conserving tillage. With plowing, the farmer breaks up the soil particles and increases its ability to absorb and to retain the rainfall. He plows later not only to keep weeds down but to prevent a surface crust from forming that would allow stored moisture to evaporate. He can create a "dust mulch" over the surface to keep the moisture from passing into the air.

With the signing of the U.S. Reclamation Act in 1902, groundwork was laid for large-scale irrigation projects much too expensive to be paid for by private landowners. The Act would in years ahead provide funding for dams such as Elephant Butte, Caballo, El Vado, and Conchas.

Into the Twentieth Century

In 1889 New Mexico's institutions of higher learning were established with the agricultural college set in Las Cruces. The college's Agricultural Experiment Station was established with early research focusing on increased yields.

By the time the territory became the 47th state in 1912, U.S. pioneers had "discovered" New Mexico. They found not an empty land but a land that had been settled and set in its ways for many seasons. They did not introduce farming and stockraising as they did in other parts of the frontier; rather, they brought innovations to it and they adopted some of the ways they found here. They learned about wells and windmills and irrigation and dryland farming. They competed for pastures, farmland, and water - everyone trying to get a share of that "worn-out" land described by one of their contemporaries.

They had entered a land dominated by the sheep industry and seen the cattle industry take hold. Livestock raising in general had increased greatly, with pastures fully stocked by 1880 - changes in later years would be in terms of types of livestock pastured rather than in numbers.

From relative isolation in the 1840s, New Mexico had moved into the twentieth century with two transcontinental railroads across her land and many feeder lines and stagecoach routes. Livestock at least could be marketed outside the territory, and a growing urban population provided a bigger market for farm products.

The first of the U.S. homesteaders had settled on the land, tasting the sweetness of good years and bitterness of bad. Those who stayed as agriculturists survived, not because the land suddenly had a milder disposition but because they adapted to its temperament.
Fantastic changes have occurred in both livestock raising and farming since New Mexico changed her territorial status for that of statehood. Farmers 60 years ago had little choice of seed to plant; today there are dozens of varieties for some crops. Pioneer farmers used organic fertilizer to increase soil fertility; today New Mexico imports tons of commercial fertilizer. In 1912 very few farms had electricity - even as late as 1950 only about half had electric power. Today electricity is commonplace.

The draft animal and plow were seen on prosperous farms in 1912; gasoline-powered machines have taken their places, though it was after 1945 when mechanization really arrived on New Mexico farms. That year only 28 percent of farms had tractors and 34 percent had trucks. By 1969 there were 16,000 tractors, 19,000 trucks and 1,000 combines on New Mexico's 13,000 farms.

Ranchers for the most part grazed their animals on open range during territorial days. There was little supplemental feeding of animals during winter. Herd improvement through breeding programs was not practiced, though increasing competition with better quality beef from other parts of the U.S. in the 1890s had forced stockmen to think along those lines. Succeeding years saw land fenced, herd improvements in both sheep and cattle through breeding and/or introduction of better stock. New Mexico has grazed imported livestock on her land in this century, sent its livestock to other parts of the U.S. for finish feeding, and now, with growing feedlot operations, is part of the largest livestock feeding area in the world (made up of the Texas Panhandle and adjacent areas).

Sheep have declined in importance though, in numbers, cattle did not exceed sheep until 1956. Livestock products continue to be the largest single item of farm income in the state accounting for some $627 million in 1983, and livestock feeding will continue to be important. New Mexico has a climate ideal for it, the state is close to the markets and produces feed grain.

Pastures Are Fenced

One of the most significant pieces of legislation in the history of New Mexico livestock raising was the Taylor Grazing Act passed in 1934. Up until that time federal land, which is 33.5 percent of the state's more than 77 million acres, was unfenced. Use of it for grazing livestock fell to those who could take it. The pasture was good for about 25 years, so the tendency was to use it up and move on - there were no incentives for conserving the pastures and overgrazing occurred extensively.

With the Taylor Grazing Act came a stability for the livestock industry. Long-term leases on the public domain were awarded to those who could make the best use of the land. One long-time observer noted that in New Mexico "best use" meant land went to those with water rights. The public land could be fenced, and ranchers leasing the land had reason to consider conservation practices on the pastures.

As a result of fencing on government and private land, livestock owners could manage their stock better. They could establish grazing patterns and protect their increasingly better breeds as well as conduct breed improvement programs. Sheepmen found that fleeces were less dirty since the sheep did not crowd together as much in fenced pasture as they did when grazing as a herd.

Eighty-eight percent of the state is used as range for cattle, sheep, and other domestic animals today, continuing a pattern that was begun in the sixteenth century. Nine percent of the state is in timber and only about three percent is cultivated for crops. Irrigated agriculture, important as it is, occupies only about one and one-half percent of the land in New Mexico,
with a little less than two percent in dryland crops. It is estimated that another 11 percent is highly suited to irrigation if more water were available.

Groundwater Extends Farming

Irrigation has changed. When the Indians, Spaniards, and Mexicans irrigated in earlier times, they drew from surface water of rivers and streams. Today a larger share of water is pumped from underground sources than ever before. Most of the new irrigated acreage is in the eastern part of the state. In 1940 Curry County had no irrigation, but by 1975 it had about 198,600 irrigated acres; Lea County irrigation went from 3,200 to 100,000 acres in that period, and Roosevelt County went from 11,300 to 135,000 acres. By 1975, 27 percent of irrigated cropland depended on surface water while 60 percent depended on groundwater supplies; 13 percent drew from both surface and groundwater.

At present, water in some areas is being mined; that is, water is being used faster than it is replenished naturally. Unless other large water sources are found - such as water from the Mississippi or Columbia rivers - irrigation will be impossible in the eastern part of the state within the next 20 years. All the water that is available for use in the state is being used, and urban demands for water are increasing. For the foreseeable future, expansion of irrigation will have to be in the form of using available water in a more efficient way. Man is again being forced to adapt his goals to the rules of the land.

Different Crops, Different Markets

Crops which made up the largest share of irrigated land from 1970 to 1975 were alfalfa, sorghum for grain, upland cotton, planted pasture, and wheat.

Dryland farming was being carried on over some 1.4 million acres in 1975. Greatest dryland acreage occurs in Curry, Roosevelt, and Quay counties, but a total of 28 counties in the state report dry cropland acreage. Sorghum, wheat, and other small grains account for almost 90 percent of the dryland crops produced.

Horticultural crops gained commercial importance only in this century with real development after 1940. The three biggest crops are lettuce, onions, and chile - chile is the only crop that has the edge on the U.S. market. Doña Ana County has 74 percent of the vegetable acreage and ranks 39th among counties in the nation in value of vegetables sold. Most statewide production is geared toward the fresh market, with the exception of chile which is processed both in New Mexico and in Texas. Output in northern New Mexico is largely from many small farms, with produce going mainly to roadside stands and local retail stores.

Farmer's markets have proved a boon to some small producers in both New Mexico and the nation. Some growers make as much as $600 a day during a five-month season, selling for two days a week, and take in more than $20,000. For others the markets provide a supplemental income.

Cotton, grown by the Indians when the Spaniards arrived, came back into importance only after World War I. Grown mostly on irrigated land in the Pecos and Mesilla valleys, except for early nonirrigated acreage in Roosevelt County, cotton by 1964 produced income that exceeded that of all other crops combined. Hay now brings in more money than cotton. In 1982 the value of hay production was $103 million, compared with $30 million for cotton and cottonseed.

Trends of Change
While earlier agriculturists in the state were oriented toward self-sufficiency and therefore raised both crops and livestock, today's agriculturist tends toward one or the other - the age of specialization. All ranchers do not raise both cattle and sheep as in colonial times, though most sheep ranchers do raise some cattle. Efficient use of pasture may call for raising both - high pastures with short grass and a high percentage of browse can best be used by sheep while lower pastures with tall grass are better suited for cattle.

Where the territorial farmer learned to keep a few livestock to see him through times of drought, today some ranchers have taken to cultivating a few acres of feed as a hedge against high feed costs.

The trend is toward fewer farms both in the U.S. and in New Mexico. The state had 32,000 farms in 1926; by 1982 the number had dropped to 13,500, but the average farm is larger than ever before. Northern New Mexico, however, still has many small farms as a result of Spanish inheritance patterns. Land was divided among all sons rather than passed on to the eldest. Many of these units are marginal with most income earned off the farm - they are too small for modern technology and therefore cannot compete on today's market.

There was a time when a person could start small and expand; today requires a capital investment in land whose price has been pushed up dramatically in the last 20 years by speculation. In addition, a beginning farmer would face seed and fertilizer prices far above those of earlier days, and he could expect rising fuel costs. Though the 1969 average value of machinery and equipment on New Mexico farms was $10,625, the cost of even one new piece of equipment could surpass that. A new tractor could cost up to $40,000. Small won't do it today - any more than that 200-mile furrow would yesterday - it is volume that makes a living in agriculture.

Marketing has undergone continuing revolution since statehood. Early in the period most products were shipped by rail to large processing centers. Then highways proliferated and trucks offered greater choices of routes to different markets. Since about mid-century, the nation and New Mexico have seen a decentralization of processing operations. Plants have relocated closer to raw products. An important example for this state is in livestock processing. Big packing houses were located in Chicago, Denver, Fort Worth, St. Louis, and Kansas City, all large population and railroad centers. Major companies now have smaller plants located near feedlots. There is one near Clovis and one near Roswell. The final curtain on the cattle drama that began with the big trail drives came down in 1971 with the closing of the famous stockyards in Chicago.

Along with climate, transportation, marketing and scientific research, the federal government has influenced development of agriculture, beginning in territorial days and continuing to the present. Through marketing quotas and support prices, the government has influenced quantity and price of goods. In New Mexico the quota system has affected acreage and production of at least two crops - cotton and wheat. Support prices have influenced crops such as grain sorghum. The present trend is towards a supply and demand market with fewer artificial controls.

Government regulations and incentives have also been aimed at conservation of soil, water, and range resources. Since 33.5 percent of New Mexico is federal land, U.S. government policy in range management vitally affects the state's livestock industry.

The modern farmer must still depend on the land and elements for his living as did his predecessors, but his success is more than ever tied to management capabilities. After all, his
business may have a per acre capital worth hundreds of dollars. The average for cropland in the state is around $1,200 an acre but it varies widely.

In his decision making, he can draw on knowledge gained through scientific research at New Mexico State University's Agricultural Experiment Station. Bringing this knowledge are the NMSU faculty members in the Cooperative Extension Service, with offices in every county in New Mexico. Many of the increases in production in this century are due to seed variety improvements; tillage, harvesting, and irrigation research; investigations in livestock feeding and breeding; and advances in pest management and weed control made at NMSU. Assisting producers, markets, and consumers in the state is the New Mexico Department of Agriculture, formally organized in 1955. It is a regulatory and consumer service agency and touches the lives of every person in the state.

Consumer and Producer Separate

The seventeenth or eighteenth century consumer surely had a better picture of local agriculture than we of the twentieth century, because if he was not an agriculturist, he nevertheless depended on someone nearby for his food. A local crop failure meant no supply for him. Even as trade progressed in the nineteenth century, he knew by a visit to the general store what was produced by looking in the barrels and bins and boxes. Lack of refrigeration meant that most food other than staples was dried, pickled, or smoked unless it was fresh from nearby.

Today's New Mexico consumer, who is statistically less and less likely to be a farmer or rancher, enters a well-lighted supermarket and chooses from a wealth of fresh, frozen, and canned goods year around. Since potatoes are available all year, he may not be able to tell you when potato harvest is in his area, or indeed if potatoes are grown locally. A city dweller no longer looks at the darkened, threatening summer sky the same way residents of small rural communities have for generations. While he may appreciate the need for moisture on the farm and pasture, he is removed from the firsthand knowledge that prolonged summer rain can also ruin onions in the field or play havoc with other crops that need to be harvested within a few days.

Today's consumer knows more about prices of agricultural products and food than he does production, though he may not know that he pays less of his paycheck for food than any other country in the world. He spends an average of one-fifth or 17 to 20 percent, of his earnings for food. People in Western Europe pay 30 percent, and those in Eastern Europe, Africa, and Asia may pay as much as half their earnings to feed themselves. The consumer also rarely realizes that an average of only about 40 cents of every dollar spent for food goes to the farmer or rancher, and from this he must pay his expenses.

A Prospect of Plenty

The consumer in New Mexico and the United States has a greater variety of foods to choose from than any country in the world because of advances in research, transportation, marketing, and technology - and, of course, because of giant steps taken by those who till the soil and raise the livestock.

Year after year New Mexicans reap a new harvest from that same "worn-out" land that so worried the nineteenth-century traveler. With conservation and planning, that same land will continue to feed livestock and produce crops through the next two hundred years and beyond.
Agriculture has grown with New Mexico and made it grow. Man has been able to live from New Mexico's soil so long as he has recognized the special relationship he has with the land that gives no quarter.

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Mr. Douglas Bryant, Horticulturist, Cooperative Extension Service, New Mexico State University, Las Cruces, New Mexico.

Dr. William N. Capener, Professor of Agriculture Economics, New Mexico State University, Las Cruces, New Mexico.

Dr. George R. Dawson, Department Head and Professor of Agriculture Economics, New Mexico State University, Las Cruces, New Mexico.

Mr. Borden Ells, Dairy Specialist, Cooperative Extension Service, New Mexico State University, Las Cruces, New Mexico.

Dr. David W. Francis, Department Head and Professor of Poultry Science, Department of Poultry Science, New Mexico State University, Las Cruces, New Mexico.

Dr. James R. Gray, Professor of Agricultural Economics, New Mexico State University, Las Cruces, New Mexico.

Dr. Philip J. Leyendecker, Dean Emeritus, College of Agriculture and Economics, New Mexico State University, Las Cruces, New Mexico.

Dr. Norman Malm, Professor of Agronomy, New Mexico State University, Cruces, New Mexico.

Mr. Phillip E. Neale, Professor Emeritus of Animal Science, New Mexico University, Las Cruces, New Mexico.

Mr. James Sachse, Sheep Specialist, Cooperative Extension Service, New Mexico State University, Las Cruces, New Mexico.

Ms. Ruth Sneed, Food Marketing Information Specialist Emeritus, Cooperative Extension Service, New Mexico State University, Las Cruces, New Mexico.

Dr. R. Ralph Stucky, Director Emeritus of Water Resources Research Institute, New Mexico State University, Las Cruces, New Mexico.

Ms. Dorothy Sullins, Information Program Director, New Mexico Farm and Livestock Bureau, Las Cruces, New Mexico.
Mr. John White, Head of Agriculture Information, Emeritus, New Mexico State University, Las Cruces, New Mexico.

Dr. Fred Widmoyer, Department Head and Professor of Horticulture, New Mexico State University, Las Cruces, New Mexico.

Mr. William W. Wile, Statistician, New Mexico Department of Agriculture, Las Cruces, New Mexico.

ABOUT THE AUTHOR

Ree Sheck, a freelance writer, has lived in New Mexico since 1972. She was employed as a newswriter for Information Services at New Mexico State University, and from 1973 to January 1976 was managing editor of Aggie Panorama, NMSU’s bimonthly newspaper for faculty, alumni and friends of the university. Before moving to New Mexico, she lived in Texas, Ohio, Guatemala and Ecuador; working for newspapers, a publishing company, a seminary and as a stringer for a news service.