Hereford, Texas, population 15,000, is the seat of Deaf Smith County up in the panhandle. Among its claims to fame, Hereford is known as the Town Without a Toothache, due to the unusual amount of fluoride in the water, but to us ranchers it is better known as the Beef Capital of the World because there are reportedly 3.5 million head of cattle on feed within a one hundred mile radius of the town.

Low Tide on the Ogallala

A sign of things to come might be happening near Hereford, Texas

STORY AND PHOTOS BY BERT ENTWISTLE

Up in the panhandle of Texas, just southwest of Amarillo, lies the town of Hereford, population 15,000 and the seat of Deaf Smith County. It's a town with solid historical ties to the ranching business, and it doesn't take more than a moment to realize that cattle are a major part of the life's blood of the area. Originally founded as Blue Water, the postal authorities realized there was already a Texas town with that name, and the little settlement agreed to make a change. In September of 1898, L. R. Bradley and G. R. Jowell brought the first Hereford cattle to the area from England and the town readily adopted Hereford as their new name. The endless grass prairie with its abundant good water soon became home to thousands of Hereford cattle.

In hindsight, Blue Water may well have been a good choice for a name, because from the earliest days of the town, water would become everything to the future of the economy. Cattle may have been the start of early prosperity in the area, but the abundant ground water eventually drew farmers looking to plant crops like wheat and sugarbeets. By 1904, Hereford became known as the 'Windmill City', boasting more than four hundred windmills providing water for the area's expanding agriculture business as well as its residents. Add in the new railroad spur that connected Hereford with the rest of the West, and you had an economy ready to explode.

By 1911, crop irrigation was beginning to show up in the panhandle and by the 1930's it was a common sight through the area. In 1948, the town began to bill itself to the world as the 'Town Without a Toothache' because it was said to have a very high level of natural fluoride in the water. This seemingly unlimited supply of good water drew many more farmers and businesses of all kinds to this remote part of the West. The area farmers and residents hung on through the brutal dust bowl days, and by the late thirties they were producing cotton, potatoes and other vegetables.

SITTING ON SOMETHING BETTER THAN GOLD

Hereford's secret weapon has always been the Ogallala Aquifer, a vast underground reservoir that stretches from South Dakota to Texas and has been a huge part of the town's prosperity for a century. Also known as the High Plains Aquifer, it lies under parts of eight different states and supplies thousands of different agricultural operations. Some 27% of the irrigated land in the U.S. lies over this vast water supply and it provides about 30% of the country's irrigation water, and most of the drinking water for area residents.

As the farming industry took hold in the panhandle, the days of the large range cattle operations slowly began to fade. The ground simply became too valuable as farmland. Today, fields of corn, sorghum and cotton can be seen for miles in every direction. For the most part, cattle have been moved into feedlot operations, utilizing particular fields (like wheat pasture) for grazing only at certain times as they become available for forage.

As the cattle producers turned to feedlot operations, the native grasses gave way to grain and vegetable fields and new relationships began to form. Corn rapidly became the feed of choice for the cattle industry and, as agriculture advanced, more by-products became available for the feedlot operators. Early on, the beef producers and the farm industry settled into a good working relationship; the farmers provided feed such as corn and milo in both grain and silage for the growing cattle industry, and the feeders in turn provided manure from the thousands of cattle for the farmers to use as fertilizer. But that was about to change.

"Today, by some estimates, there are more than three million cattle within a 100-mile radius of Hereford."

NEW PLAYERS IN TOWN

Soon after the Energy Policy Act of 2005 went into effect, the ethanol-producing industry began to build more and more plants to keep up with the predicted demand. Today there are more than 140 ethanol plants in the U.S., and water is very much the key to production. The plants buy grains like corn and milo from local producers. It requires 2.5 bushels of corn and 1,000 gallons of water to make one gallon of refined ethanol. To grow a bushel of corn, depending on yield (using 200 bushels per acre), requires another 2,500 gallons of water for that one bushel.

In return, the local economy gets a boost in construction jobs as well as permanent jobs and the local grain producers have another market for their product. A by-product of the ethanol production is wet distillers grain, a high-protein feed used extensively by the feedlot operations in the area.

Today, by some estimates, there are more than three million cattle within a 100-mile radius of Hereford, and the cattle industry still plays a key role in the life of the city. But other new players have come on the scene in the last few years and are working hard to find their place in the scheme of things. Large-scale dairies have begun operation and some have more than 5,000 cows milking at any one time. The water needs for a lactating dairy cow's consumption range between 40 and 50 gallons per day. Depending on the

Hereford-area resident David Templeton stands underneath a now-defunct pivot that previously watered 320 acres of cropland on his outfit. Today, like much of the land he controls in Deaf Smith County, Texas, it is covered in grass instead of corn.

HALF PAGE

1/3 Horizontal

Corn is steam-flaked and fed to the hungry cattle in the many feedyards surrounding the historic town of Hereford.

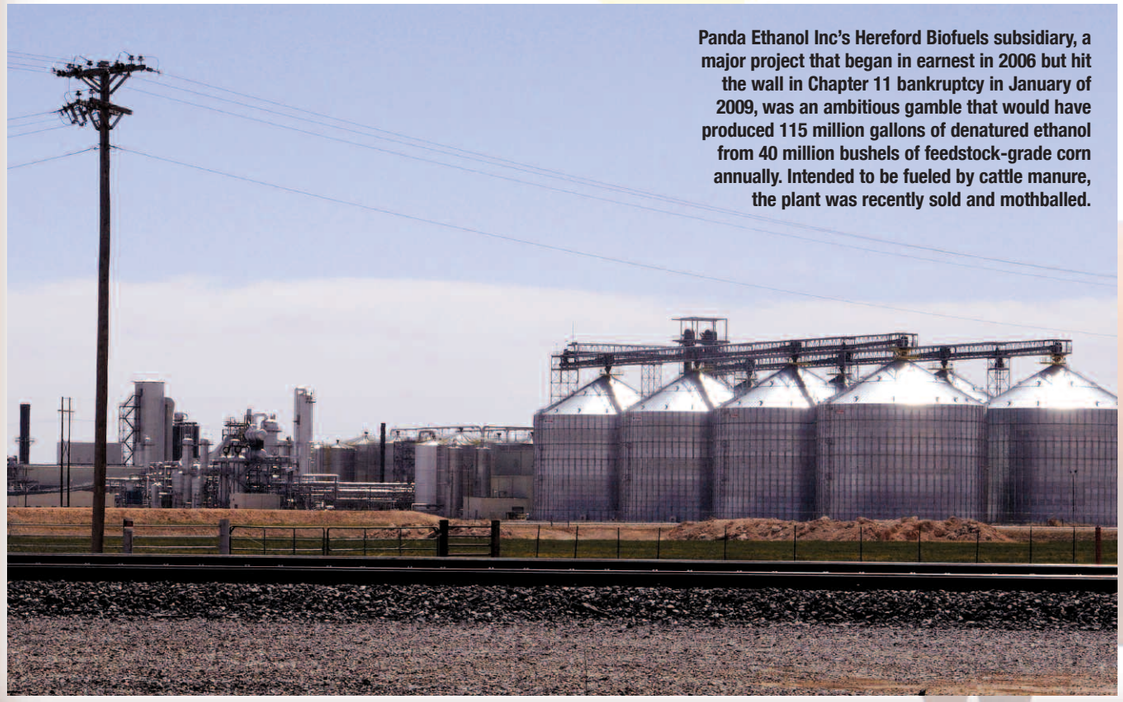
sanitation and manure removal technology used in the barns, you can add in about 20-30 gallons per cow every day on top of that.

Today's modern dairies in the Hereford area are mostly self-contained operations, owning and irrigating enough land for most of their own forage needs. The dairies buy an estimated 10-15% of their feed from local sources. To keep up with their needs, many dairies 'double crop' their fields, resulting in irrigation pumps working year around.

As you drive around the countryside, the pivot irrigation systems seem endless. A constant hum from the pumps is heard everywhere you go. With the exception of the 19" average annual rainfall, (often much less in these drought years), everything that grows gets water from the Ogallala Aquifer, and all the water that is consumed by animals and people comes from this giant storage facility as well.

B.L. Harris, acting director of the Texas Water Resource Institute, knows well the problems of the Ogallala system. "The one big issue with regard to the Ogallala is the fact that the annual recharge is much, much lower than the extraction rate that we are putting on the aquifer at the present time. The aquifer is over-drafted to a substantial extent." Harris says that with proper conservation and new legislation we could significantly slow down, if not reverse, the rate of loss. "Americans are very short-sighted with regard to our water. We're going to continue to lose cropland for quite a while. There are many reasons for it, one of them is the expense and the other is the politics. Nobody wants to allow one area to benefit at what they would consider to be their expense."

Rick Auckerman, AgriLife Extension



Panda Ethanol Inc's Hereford Biofuels subsidiary, a major project that began in earnest in 2006 but hit the wall in Chapter 11 bankruptcy in January of 2009, was an ambitious gamble that would have produced 115 million gallons of denatured ethanol from 40 million bushels of feedstock-grade corn annually. Intended to be fueled by cattle manure, the plant was recently sold and mothballed.

The demand for livestock feed in Deaf Smith County is a major reason why the water table has been depleted over the last ten years in the Hereford area.

agent for Deaf Smith County based in Hereford, says, "Water demands and usages have increased in the past five to ten years due to the increased need for feedstuffs to fuel our animal agriculture sector in the county. New wells are being drilled constantly to mine our water to support the crop and forage demands." Increased water use in the area has required producers to find new and better ways to conserve every drop of water that is being pumped out of the aquifer. "Improved center pivot irrigation systems being used today that deliver the water with precision are a far cry from open ditch and tail water pits that were used in the past," he adds.

Making agricultural producers aware of their yearly water use is part of the job of High Plains Underground Water Conservation District No.1, based out of Lubbock, Texas. Their annual depth to water measurement on area water wells show a decline of 1.69 feet for the past season and a six inch decline for the past five year period.

The next pieces to the Ogallala puzzle may be the CRP (Conservation Reserve Program) acres that are due to come out of contract this year and in subsequent years. Deaf Smith County alone has approximately 182,000 acres in the CRP. "If producers choose to put this once fallow land back into crop production it could accelerate the depletion of the Ogallala even further," cautions Auckerman.

WHO HAS THE WATER RIGHTS?

David Templeton was raised just south of Hereford and has been involved with agriculture in one form or another all his life. Like many residents of the Texas panhandle, he has strong family ties and a close relationship with the land.

"I was born close to Littlefield, but my folks moved here soon after I was born. All of my life we've been trying to make a living by farming or running cows," says Templeton. His family ground started out like it all did, as natural grass, and running cattle was a way of life most ranchers had known for years. When the economics of planting and growing crops like cotton or grain sorghum started to take off, wells were drilled, irrigation put in place, and the cattle began the move into the feedlots.

"The aquifer is over-drafted to a substantial extent."

"In this part of the world, that was kind of the boon of agriculture," Templeton recalls. "You could drill the wells and there'd be ample water and you could really do alright. But over a span of fifty years it went from that to very nearly nothing. I mean we have stock water left and that's about it." Most farmers in that era ran a few cattle for their personal use and because they liked that part of the lifestyle. As the vast expanses of grass disappeared into the history books of Hereford, the open range ranchers slowly gave way to those that saw their future in the soil.

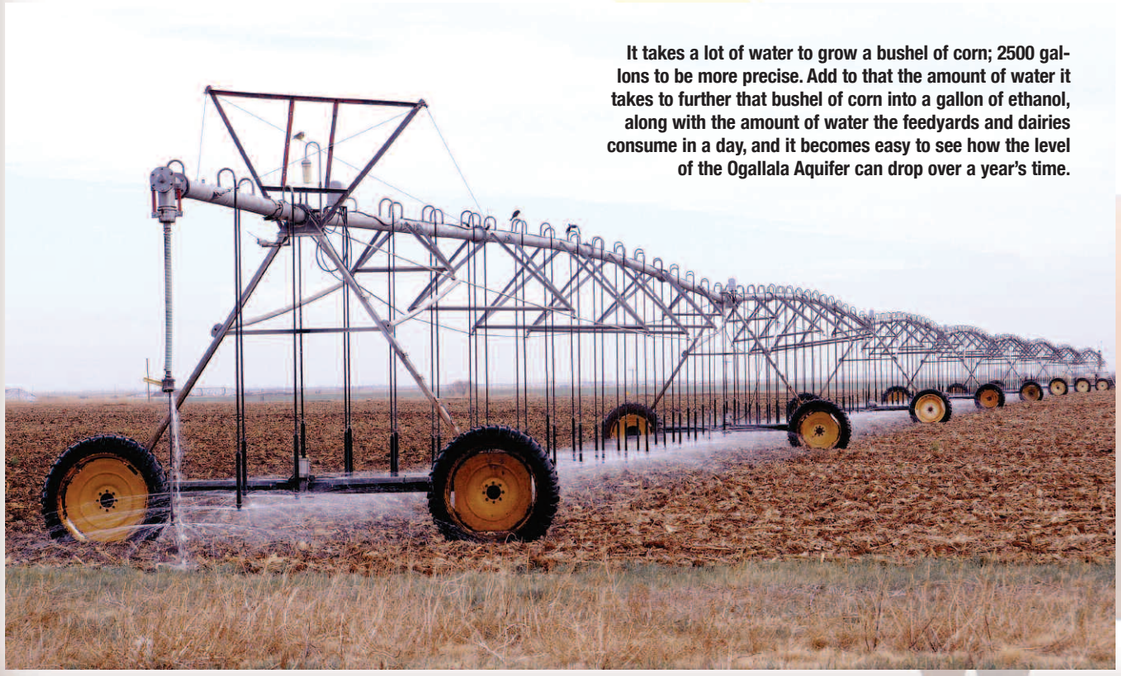
Today, after fifty years, the water is again the hot topic in the agriculture industry. With mechanical irrigation in nearly every field, a new trend is forming – irrigation equipment parked in the weeds at the edge of the fields.

"This right here was grass," said Templeton, pointing to the ground next to his now defunct irrigation system. "We took this out of grass when I was probably six years old. When I was about fifty-six, we put it back in grass." As the abundant irrigation water fades into those same history books, the next chapter of life in this part of the panhandle is already being written as more cattlemen begin the transition back to the days of grass.

David Templeton is a realist and he knows that to get along in this tough business you have to be able to adjust. As the demand for more and more water pulls at the aquifer, the future of the cattle industry is continuing its never-ending adjustment to the local conditions.

Templeton may be a little ahead of the curve when it comes to his operation, but the future looks pretty clear to him. "I imagine what we'll do is just to continue to put in more grass as we go. I've very nearly now got it all in grass that's not under a good irrigated circle, and as the water depletes, we'll probably put some more of those circles in grass."

Water has been plentiful in this area since irrigated farming took hold in the 1930's, and it has produced tremendous success and prosperity for many thousands of people living in the area. Today, as the water flow slows and more irrigation systems begin to rust away in the weeds, Templeton and many of his fellow ranchers and farmers share a pragmatic view of things. "We're all guilty of being greedy enough to try and grow corn when it's like it was in '08. You jump out there and try to capitalize on that – it didn't work – but we tried to. What I think it is," Templeton continues, "… and I think we're as guilty as anybody, from the inception of this irrigation part, we've sold our water for nothing – we've given our water away. The only really good resource we've got we've pretty well squandered, that's basically what we've done."



It takes a lot of water to grow a bushel of corn; 2500 gallons to be more precise. Add to that the amount of water it takes to further that bushel of corn into a gallon of ethanol, along with the amount of water the feedyards and dairies consume in a day, and it becomes easy to see how the level of the Ogallala Aquifer can drop over a year's time.

Fresh wet distillers grain made from milo is delivered to a feedyard. It is warm and damp when the mash is unloaded off the truck.

When asked what he sees twenty or thirty years down the road Templeton doesn't hesitate. "I see it all looking just like this," says Templeton, gazing out across 320 acres of former crop ground now planted in grass. "It's like a big circle – we've almost come all the way back around." WR

HALF PAGE