COMMERCIAL FOCUS

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Sustaining and Adapting

Hereford genetics are integral to the unique high-altitude challenges at Knott Land and Livestock in Colorado.

by ***Wes Ishmael***

Sustainability and its many definitions are nothing new at Knott Land and Livestock Inc. near Oak Creek, Colo. It has been their focus for going on five generations.

"I view sustainability and survivability as relatively synonymous," says Tyler Knott, who operates Knott Land and Livestock with his dad and their families.

"If we are surviving, then we are sustaining. Our operation has been located here on Trout Creek for 85 years. Through that time we have raised and produced sheep, cattle, chickens, eggs, milk cows and cream, draft horses, goats, potatoes, etc. Market and operating conditions — climate and weather, labor availability, community infrastructure — have caused the operation to change over time," Tyler explains.

For instance, shifting reality across years means Knott family members have been willing to work off the ranch. Tyler's dad, Bernard, worked in coal mines during the 1970s. Tyler's mom, Debra, taught school. Tyler's wife, Megan, is Director of Stewardship for the Colorado Cattlemen's Agricultural Land Trust. At various times, Tyler has worked in construction and hunting.

These days, Knott Land and Livestock is primarily a cow-calf operation, but they also run yearling cattle, along with raising sheep.

"The sustainability of our operation has been the ability to adapt, try new things, be willing to accept change, and ultimately, evaluate a decision for the benefit of the ranch — the land," Tyler says. "If you take care of the ranch, it will take care of you as the stewards. We have been blessed that Trout Creek and this ranch have always taken care of us."

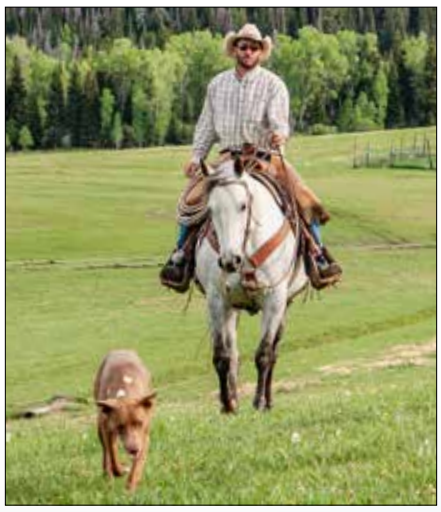

Photo by Cathy Wright, Gering, Neb.

Hereford genetics are a key crossbreeding component at Knott Land and Livestock, Oak Creek, Colo., and they are integral to the operation's fed cattle marketing.

Like those who came before them, Tyler and Megan are focused on giving their two young children, Ella and Collin, the chance to continue being stewards of the ranch.

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Hereford for high altitude and more

Oak Creek is near Steamboat Springs in Colorado's Rocky Mountains. The views here at the headwaters of Trout Creek in the Yampa River Basin are as striking as the challenges associated with running cows at high altitude.

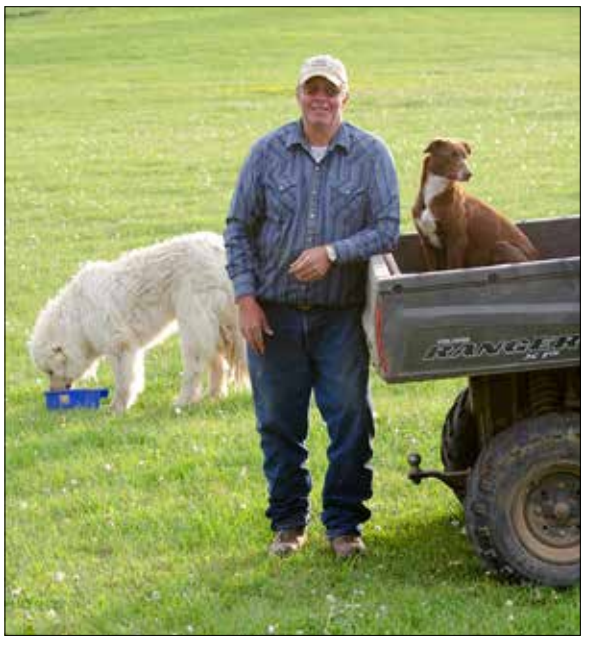
"Our elevation of 8,000-plus feet, and long winters create a shortened timeframe to complete our production cycle. We spend all summer growing our hay and harvesting it to turn around and feed it all winter. There's normally only about 60 days a year that is not connected to hay production or feeding," Tyler explains.

But the condensed forage and hay season isn't the only challenge they face at higher elevations. Get higher than 5,000 feet or so in elevation and brisket disease (see Brisket Disease Basics) becomes a common and oftentimes deadly nemesis to cattle. It poses increasing risk the higher you go.

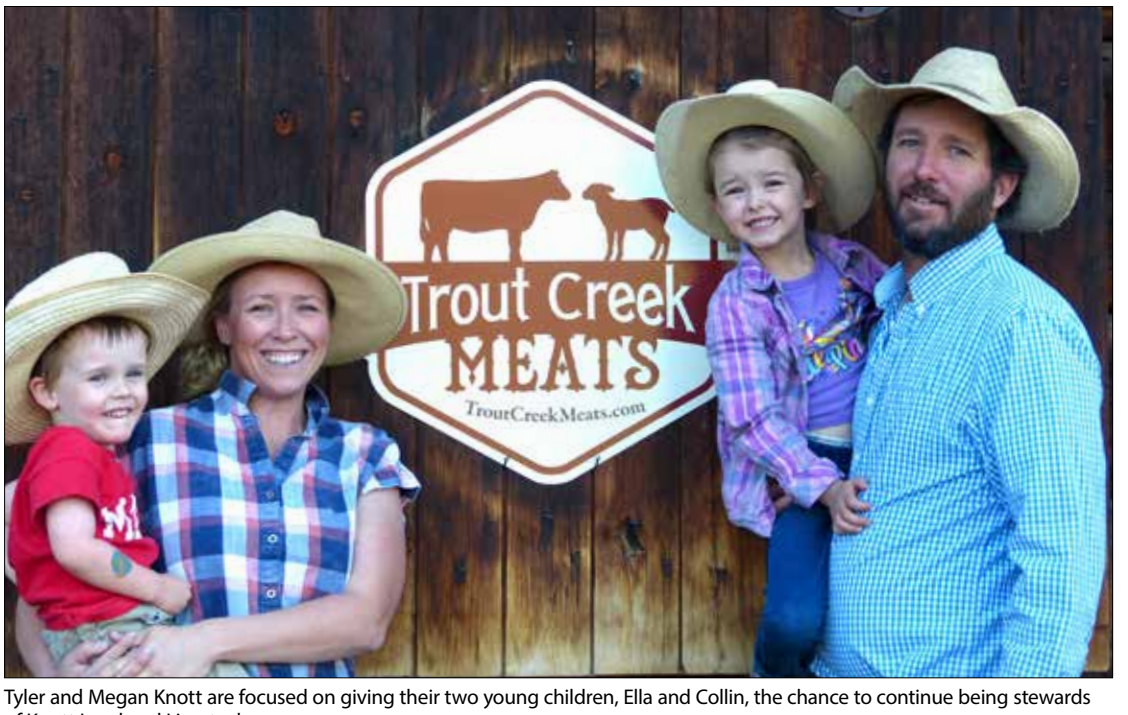
Photo by Cathy Wright

Megan and Tyler Knott are well grounded to share their operation's sustainability story with consumers and to find common ground with them. Aside from experience on the ranch, Megan earned a master's degree in environmental management and forestry from Duke University's Nicholas School of the Environment. Tyler graduated from the University of Wyoming with a bachelor's degree in rangeland ecology and watershed management.

Photo by Cathy Wright



Bernard Knott (pictured) and his wife, Debra, are the third generation to operate Knott Land and Livestock. Tyler and Megan are the fourth.



Tyler and Megan Knott are focused on giving their two young children, Ella and Collin, the chance to continue being stewards of Knott Land and Livestock.

Brisket disease is one reason Knott Land and Livestock began using Hereford cattle decades ago and why they continue to use them as a key crossbreeding component. Although all breeds of cattle are susceptible to brisket disease, Hereford genetics have proven to be more resistant, based on the lower percentage of Hereford cattle that fail Pulmonary Arterial Pressure (PAP) testing.

"Hereford cattle provide us with more genetic selection with confidence regarding their adaptiveness to altitude," Tyler explains. "They also offer consistent length, volume, fleshability, and sustainability within the herd. One of the more important things Herefords do for us is a more consistent disposition. Calm cattle gain more pounds. I culled a Hereford cow due to age this fall, for drought reasons only. She was a coming 12-year-old with only a few teeth and she was probably one of our best-fleshed cows. She bred within our breeding window, and raised an above-average calf. I haven't had the same results with other breeds we have used."

Crossbreeding values

"We have been crossbreeding Herefords and [black and red] Angus since I was a kid, for at least 35-plus years," Tyler says. He explains the targeted level of each breed incorporated into their herd has evolved over time.

In simple terms, the Knotts sort cows by color. Hereford bulls are bred to black, black brockle-face and black baldy cows. Angus bulls are bred to Hereford and red white-faced cows, as well as to what Tyler terms black Hereford cows. The latter are black and white cattle marked like Hereford.

"I have historically strived for about a five-eighths Angus and three-eighths Hereford to gain milkabilty and the marketable black hide," Tyler says. "Our marketing conditions have changed, and I am now breeding far more heavily with Hereford. Forty percent of my replacement heifers are marked Hereford (red-hided and white-faced) going into this winter."

The changed market conditions he mentions have to do with the advent of a value-based fed cattle grid offered by the Greater Omaha beef packing plant in Nebraska. The grid favors Hereford and Hereford-influenced cattle.

Besides sending some of their homegrown cattle to Chappell Feedlot in Nebraska's Panhandle, the Knotts partner with the feedlot to bring in Hereford and Hereford-influenced cattle to graze summer pasture at the ranch. Here again, the Hereford influence hedges the odds against brisket disease. After summer grazing these yearlings head to Chappell where the feedlot and Knott Land and Livestock aim to market most of the loads on the Hereford-favored grid at Greater Omaha.

"Over the past couple of years, I have had the opportunity to expand our operation by leasing a neighboring ranch. We are limited on our winter carrying capacity due to hay production and the cost of hay to purchase, so we have opted to diversify by running yearling steers," Tyler explains. "I have partnered with Chappell Feedlot to purchase steer calves in the spring, get them put together and cleaned up and then send them up here to graze for the summer. Our goal is to gain 225-250 pounds during a 105-day grazing season, and then we ship them back to the feedlot to be finished."

Drought in Routt County, Coloardo, where the Knott ranches are located, was among the worst on record in 2020 and 2021. Tyler describes it as equivalent to or worse than during the 1930s. He knows because of the family's ranch history handed down through the generations — from his grandparents to his parents and now to him.

Due to the drought, Tyler says, "Our goals and reality have been separated slightly." But, he adds, "We still achieved rates of gain between 2.1 and 2.4 pounds per day, even though we had early shipments out and reduced stocking rates."

For the record, a pen of Knott steers at Chappell Feedlot the first part of December was gaining 4.6 pounds per day and converting at 5.3 pounds of feed per pound of gain.

Traditionally, Tyler explains, the family weaned their calves at home on grass hay and held them until after Jan. 1 to market during the special calf sales held in conjunction with the National Western Stock Show in Denver.

High altitude makes for a condensed growing season at Knott Land and Livestock, but summer grass is strong. Yearling steers can gain upwards of 2.5 pounds per day during a 105-day grazing season.

"Since 2018, due to limited hay availability, we have been weaning our calves at a backgrounding lot and adapting our marketing options to what indicators we think are appropriate at the time," Tyler says. "We have retained ownership and finished both our front-end steers and light heifers. I am a firm believer in only investing money into good cattle and not feeding those that will drop the average and cost us money."

Photo by Cathy Wright

Bulls have plenty of ground, some of it steep, to cover at Knott Land and Livestock.

Selling the product

The Knott ranch also launched its own meat business — Trout Creek Meats — in March 2021. It is a natural evolution from sharing beef and lamb with friends and neighbors over the years.

Appropriately, they opened doors to the meat business on Meat-In Day, which was organized by ranchers and beef boosters in response to Colorado Governor Jared Polis' proclamation of Meat-Out Day.

"We offer quarters, halves and wholes of lamb, grass-fed finished beef, and a limited amount of grain-fed beef," Tyler explains. "Additionally, we are members of a non-profit group in Steamboat that offers us an opportunity to market individual cuts directly to the consumer. This serves as a great marketing tool to get consumers to try our products, which leads to repeat buyers and opportunities to market wholes, halves and quarters."

Trout Creek Meats markets mostly grass-fed beef because forage is what the ranch produces. Any corn in this part of the world comes with freight cost. Tyler adds their customer base also wants grain-fed beef.

"At this point, we harvest 2-year-old heifers that came in open as yearlings or lost their calf during the winter," Tyler says. "Our heiferette-type cattle can gain up to 4.5 to 5.0 pounds per day in June and July on our native pasture feed. I finish them on irrigated pastures and meadows that are predominately timothy, clover, brome grasses and other native grasses. This allows them to have great flavor and tenderness. I harvest the live animal at about 1,275-1,350 pounds, which hangs a carcass just under 700 pounds, yielding about 450 pounds of retail product.

"A direction the business is going that I did not expect is producing snack sticks and jerky. This has created an opportunity to capture value out of animals that are at the end of their production lives, predominantly bulls. Currently, our jerky is on a special-order basis due to high demand and a limited supply."

During hunting season, Trout Creek Meats markets 75-100 pounds of snack sticks and jerky per week via wholesaling at local stores.

This pen of Knott Land and Livestock steers at Chappell Feedlot in Nebraska was gaining 4.6 pounds per day at the beginning of December. They were converting at 5.3 pounds of feed per pound of gain. The Knotts also partner with the feedlot to assemble steers that go to Knott Land and Livestock for summer grazing. Those yearling steers head back to Chappell. Both home-raised and purchased cattle are fed for the Hereford-favored value grid at Omaha Beef packing plant.

Telling the story

Tyler believes communicating with consumers and the public is the primary challenge facing his family's ranch and the U.S. cattle business.

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Photo by Cathy Wright

Along with fleshing ability and efficiency Tyler Knott appreciates the calm, consistent disposition of Hereford genetics, which he says adds pounds to cattle gain.

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>
> **— Tyler Knott**

"The more direct connection we can make with the consumer, the more personal their relationship with their food will become," Tyler says. "I make this statement daily with our hunting/recreation enterprise: 'We are selling an experience not an elk.' The same needs to be true with our food system. If their sustenance becomes an experience and not just a product, then the consumer will support our business."

Along the way, consumers are more prone to think about how public policy could affect their experience. Open and deliberate communication with consumers fosters faith in beef and its producers.

Knott Land and Livestock is near a major ski and recreation area that attracts many folks unfamiliar with ranching and agriculture. It can be a microcosm of the disconnect between agricultural and urban mores. Tyler and his family are among those rare individuals who seek to understand consumer concerns and find common ground.

"We cannot continue to operate if we don't recognize other people's goals and our goals — finding the middle ground," Tyler says. "We operate in an area with a very strong tourism and recreation-rich environment. That brings in a lot of dollars, both good and bad, and a lot of ranches are being purchased by outside interests.

"These properties need managed for the health of the ranch. It's easy to combine our goals of livestock production and property management for the benefit of the property. That's the key. As operators, we need to understand that not everything we have done for 100 years is the way to go. Sometimes, there are certain pastures or meadows that can have 'other' uses. Just because that isn't how we have done it, doesn't mean that it can't be done."

With their meat business, the Knott family has a new and expanding avenue of communication with consumers.

"We in agriculture need to market our story better as utilizing the limited land we have been provided to produce products that feed and clothe the world, among other things," Tyler believes. "If we manage with a land-first mindset — and most producers do — then the land will sustain the world. We need managers of this process, just as most people need finance managers of our monetary wealth. Agriculture needs to find a way to be paid a fair rate for the services we are providing."

Although the proverbial jury is still out, Tyler says, "I hope one positive of the pandemic is that Americans can start to see how dependent they are on agriculture." **HW**

Brisket Disease Basics

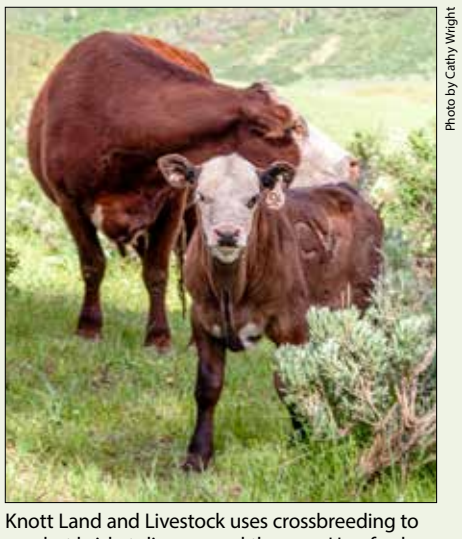
Brisket disease goes by many names, including high mountain disease, dropsy and pulmonary hypertension. It stems from declining oxygen levels as altitude increases, due to atmospheric pressure. It is common in cattle above altitudes of approximately 5,000 feet.

Simply put, with less oxygen reaching the lungs and pulmonary artery of cattle, the pulmonary artery constricts, making it more difficult for the heart to pump the same amount of blood through the lungs.

"The cow cannot adjust her respiratory rate to compensate for the lack of oxygen at higher altitudes, so her heart has to work harder to get the same amount of oxygen to the body," explains Tyler Knott of Knott Land and Livestock, Oak Creek, Colo. "As the heart works harder, it increases blood pressure; then it becomes chronic disease. They start retaining fluids and their performance is reduced. A lot of times with cows, you'll start having open cows because they can't meet their reproductive nutrition demand because they are utilizing so much energy just to stay alive. The acute side is their arteries will rupture or the heart will blow out. Ultimately, death is the end result of all brisket-related issues."

Knott ranches range to elevations beyond 8,000 feet. They and other ranchers at high altitudes routinely work to prevent and manage brisket disease.

Photo by Cathy Wright



Knott Land and Livestock uses crossbreeding to combat brisket disease, and they use Hereford, which are more resistant to brisket disease, within their crossbreeding program.

Although all breeds of cattle are susceptible to brisket disease, Hereford cattle exhibit more resistance, based on a lower percentage that fail Pulmonary Arterial Pressure (PAP) testing, a diagnostic measure used to determine individual animal risk for developing brisket disease. Cattle receive a PAP score. For instance, when tested at an elevation of 5,500-7,000 feet, cattle with a score of 34-45 are considered low risk. Those with a score of 46-49 are deemed to be at moderate risk; high risk at higher scores.

"We have consistently selected bulls with low PAP scores at 40 or below, being measured off the ranch, or at 43 or less measured on the ranch, as suitable to bring into our operation. This greatly reduces the genetic diversity we have available and is one of the major reasons we implement a crossbreeding program," Tyler explains. It's also one reason why Hereford is part of their crossbreeding system.

"The Herefords tend to do better than other breeds," Tim Holt, DVM, explained in a *Hereford World* article, Mountain Masters, several years ago. "If we wanted to sum up the Hereford breed as a whole, they tend to have a lower percentage of those tested that have failed. Does that mean they are naturally resistant to the disease? Not necessarily, but they tend to be more reliable at all elevations."

Holt received the Pioneer Award from the Beef Improvement Federation in 2018 for his pivotal role in developing and delivering a veterinary test that predicts susceptibility to pulmonary hypertension. He conducted his first PAP test in 1980. By the time he received the award he had conducted more than 350,000 PAP tests in the U.S. and other countries.

Although there is now a PAP expected progeny difference (EPD) for Angus cattle, Tyler explains the gene pool with the measure is limited. He adds, "There are too many beef animals produced at lower altitudes (below 5,000 feet) that are in the production system and cannot provide us with accurate data regarding PAP." **HW**