Agriculture Guide

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What Heifers Will Fit my Forage Resources?

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By: Aaron Berger, Nebraska Extension Educator

The old phrase, "horses for courses" now has a complementary phrase of "cows for resources." Approximately 75% of the feed that goes towards producing a pound of beef comes from forage. Recent research at Oklahoma State University by Dr. David Lalman has shown that there are significant differences in how efficiently heifers convert forage to pounds of beef in a growing diet consisting of good quality hay. In a recent article titled "Finding Forage Efficient Heifers" in the December 15 issue of the Cow-Calf Corner Newsletter, Dr. Lalman shares groundbreaking research examining forage efficiency.

Research has been conducted for almost three decades, measuring individually how efficiently cattle convert feed into pounds of gain. The feed used in these research studies tends to be high quality, energy dense, and utilizes some grain as a part of the ration. What has not been studied is feed efficiency utilizing a medium to high quality, long stem grass hay which is more similar in type to what most beef cattle are expected to utilize through grazing.

The research results show tremendous variability in the performance of the weaned heifer calves utilized in this study. Average daily forage intake ranged from 9 to 19 pounds per head per day, while average daily gain ranges from a slight weight loss to a gain of 1.6 pounds per day. In the study, there are heifers that have an unacceptable rate of gain on the forage-based diet. There are also heifers that have moderate forage intake and acceptable to even exceptional levels of gain. There are also heifers that ate a lot but only had moderate levels of gain.

In a recent BeefWatch Podcast, https://go.unl.edu/heifer_forage_efficency, Dr. Lalman shares data that consistently shows there is statistically no correlation between feed efficiency on a long stem grass hay diet when compared to an energy dense diet that has a grain component. While there is a correlation of level of feed intake in individual cattle across these diets, there is no correlation in feed efficiency! This means that cattle that eat a lot when fed an energy dense diet are likely to eat a lot when fed a long stem grass hay diet. However, cattle that are identified as being efficient when fed an energy dense diet may not be efficient when fed a diet consisting of medium to high quality long stem grass.

These research results give food for thought for those selecting bulls to produce replacement heifers and when thinking about replacement heifer development systems. Sires that have genetics for increased levels of feed intake when compared to their contemporaries, will likely pass this trait on to their resulting heifer calves. However, sires that have been shown to be efficient at converting an energy dense diet to pounds of beef, may not sire heifers that are efficient at converting forage to pounds of beef.

In the BeefWatch podcast, Dr. Lalman shared some practical thoughts for cow-calf producers wanting to produce heifers that will efficiently convert forage to pounds of beef and fit available grazing resources.

- After weaning, conduct a forage test for heifers either through grazing a medium quality forage or through feeding of medium quality hay for a 60-to-90-day period. Heifers that perform acceptably in terms of average daily gain will likely be heifers that will make cows that will effectively utilize forage resources.
- Sires with genetic potential for high levels of feed intake will likely pass these traits on to their daughters. Selecting for higher levels of feed intake will eventually necessitate a decrease in stocking rate as the same size herd of cows will eat more.
- Sires that are efficient at converting high-quality energy dense diets to pounds of beef, may not sire heifers that are efficient at converting forage to pounds of beef. The data shows no correlation between feed efficiency on a high-quality energy dense diet and feed efficiency on a medium to high-quality long stem hay diet.

The primary feed resource for cattle is forage. The competitive advantage of cattle, when compared to poultry or pigs, is that they can harvest and convert forage into high-quality protein products. Utilizing selection tools and management practices that can identify forage efficient cattle will aid in developing cows that fit grazing resources and effectively convert forage into beef.

Opportunities for Distillers Feed Byproducts in your Beef Operation

February 1, 2026
By: Galen Erickson, Nebraska Extension Beef Feedlot Specialist, Mary Drewnoski, Nebraska Extension Beef Systems Specialist, Jim MacDonald – Animal Science Professor

The use of distillers grains in beef systems has been a long-term focus at UNL because of the opportunities for a beef producer to get an inexpensive source of both energy and protein that can fit well in many cow, backgrounding, and finishing systems.

Usage is greater for the feedlot sector, but there is actually great value in younger, lightweight, backgrounding cattle. Of course, use of distillers in combination with low energy forages like residues for cows is also a consideration, or in situations when protein supplementation is needed.

We recently summarized the feeding value of distillers grains for finishing cattle and how that may have changed over time (https://beef.unl.edu/2026-beef-cattle-report/feedlot-nutrition-and-management/summary-value-distillers-grains-plus/). While the value has decreased in feedlot diets, using distillers can still be a very economical choice and fed at 10 to 40% depending on price, availability, and transportation. The value of wet is greater than modified, which are both greater than dry in terms of energy utilization. All are equal when considering their value as a protein supplement and provide a good source of bypass protein in situations where that is needed. Our data (summarizing performance from over 6,000 head across 50 experiments suggests that dry, modified, and wet have a value of approximately 103, 115, and 120% the value of corn for finishing cattle. These values are lower than values we measured with cattle performance prior to 2012. If you feed distillers at 20% or less of the diet, you may not notice a large change in feed efficiency (feeding distillers at 20% that is 15% better than corn will be a 3% improvement in the diet), but cattle still tend to eat more, and gain 5-10% more when fed distillers and that extra rate of gain is valuable at today's prices. In addition, your supplemental protein costs should be lower as feeding 20% or more in most finishing diets should displace needs for expensive supplemental protein (including urea).

More data is needed with growing cattle, but the value is likely 125 to 130% the value of supplementing corn in growing diets, with a fair Total Digestible Nutrients (TDN) estimated to be 125 to 130% of corn, or a TDN in a growing diet of about 105%. Interestingly, there is no difference between dry, modified, or wet distillers when used in a forage-based diet in terms of energy content. There may be concerns with mixing in dry distillers in a forage-based diet unless your forages are wet like silage.

Again, all distillers are a good intermediate protein supplement that contains 30 to 35% protein from most conventional ethanol plants. Some new distillers byproduct feeds are becoming common in some areas that may run lower in fat, lower in protein, or in some cases, higher in protein. As always, watch the sulfur content, particularly if feeding finishing cattle and feeding large amounts or inclusions greater than 40% of the diet (on a Dry Matter (DM) basis, probably 50 to 60% on an as-fed basis).

Predicting the future always comes with uncertainty, but distillers has been priced competitively to corn for much of the past 12 months. As normal, prices are generally lower in the summer and increase in the winter, although prices have remained competitive these past few fall/winter months.

With increasing use of biofuels, there is an expected increase in the availability of soy protein products. It is reasonable to expect that the additional soy protein products may displace distillers grains use in pig and poultry diets, thereby increasing the availability of distillers grains available for beef systems. This is occurring concomitantly with decreased cattle numbers, particularly in feedlots and to the south. We expect greater opportunities to utilize distillers grains at higher inclusions may be realized in the next few years.

Understanding the actual feeding value to cattle from the previous research comparing feeding distillers grains to its alternatives should allow for good decision making and perhaps a return to feeding more distillers in diets than in recent years.

Below Breed Average Bulls May be Better!

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By: Aaron Berger, Nebraska Extension Educator

The use of genetic selection tools by cattle breeders has resulted in significant changes within the majority of major breeds over the last 30 years. With a few exceptions, the overwhelming genetic trend has been for more milk, higher weaning weight, and bigger mature weight. Without question, the use of Expected Progeny Differences (EPDs) has enabled this change. While we have achieved our goals of more, have we achieved our goals of better? The late Dr. Bob Taylor from Colorado State University said it well, "Profitable cattle are usually productive, but productive cattle are not always profitable."

Weaning weight questions

Four different benchmark data sets for commercial cow-calf producers from the states of Minnesota, North Dakota, Kansas, as well as Texas, New Mexico and Oklahoma have shown little to no change in average weaning weights or calf weaning rates in terms of the percentage of calves weaned per cow exposed over the last 15 years. This has to prompt the question why? How can it be that there has been such significant genetic change in several breeds that should increase weaning weights, but records from several commercial cow-calf data sets would indicate that there has been relatively no change?

In 2014, Dr. David Lalman from Oklahoma State University made a presentation at the Applied Reproductive Strategies in Beef Cattle meeting titled "Matching Cows to Forage Resources in a World of Mixed Messages." In that presentation, Dr. Lalman made the case that the genetic potential of many cattle today is not supported by the forage resources available, so the animals never fully express their genetic potential. He presented data that shows the cost of maintaining larger cows with higher milk potential exceeds the value produced by small increases in calf weaning weights.

In 1988, Dr. Rick Bourdon, wrote a paper titled "Bovine Nirvana – From the Perspective of a Modeler and Purebred Breeder" where he presented the case that genetic selection should be toward the optimum for what a set of resources or environment could support. Dr. Bourdon stated, "To breed for optimum means to have a target insight beyond which you don't want to go. If your goal is to maintain an optimum level for any trait, the evidence of your accomplishment is not visible change, but lack of it."

Replacement heifer considerations

Cow-calf producers have EPDs and index tools to make genetic selection decisions related to traits that impact levels of productivity and longevity. Producers selecting sires from which to develop replacement heifers may want to evaluate where their cow herd is compared to what they believe optimum to be. Producers can work with beef cattle genetic specialists and breed association representatives to help them identify what EPD levels for milk, weaning weight and mature weight best meet their target. What a producer identifies as optimum in terms of milk production, weaning weight and mature size can vary significantly from one operation to another depending upon resources available and management. When optimum is identified, sires can be selected to produce daughters whose maintenance energy, longevity, level of milk production and mature weight will move the cow herd toward identified goals given available resources.

Identifying and selecting optimum genetics for milk production and mature weight is a genetics selection approach that may require a change in focus for many cow-calf producers. It may mean selecting sires at a bull sale that are at or below breed average to move the cow herd genetically toward a desired level for certain traits. Selecting a bull that is "below breed average" is a paradigm shift for many cow-calf producers. Identifying a window of optimum given a set of resources and then selecting cattle that hit the optimum target is the goal under this method of cattle breeding. Success in selecting for optimum means that for many producers they will be selecting sires whose EPDs for milk production and mature weight will decrease the average in their herd. Simultaneously, they should be using EPDs to select for traits that will maintain or improve fertility and longevity. Genetic selection and breeding programs should focus on increased profit, and in many cases this may mean selection for decreased mature weight and milk production to move future replacements for the cowherd towards optimum.

Closing the Loop: The Soil Health Cycle and the Future of Sustainable Agriculture

January 23, 2026

By Nicole Heldt - Research Project Coordinator Maharjan Soils Lab, UNL PREEC, Mike McDonald - Nebraska Soil Health Coalition, Bijesh Maharjan - Extension Soil and Nutrient Management Specialist

Recently published in Science Societies' Crop Science, Soil Science, Agronomy news, "Closing the Loop: The Soil Health Cycle and the Future of Sustainable Agriculture" presents the Soil Health Cycle (SHC) as a framework for understanding how soil health develops through a continuous feedback loop between management decisions, soil properties and outcomes. Rather than viewing soil health as a static condition, the SHC emphasizes it as a dynamic, long-term process shaped by both biophysical and human factors.

A central message of the article is the complex nature of health, be it soil or human, when it comes to execution, despite widespread consensus on the need for it. Improvements in soil health often occur slowly, making long-term measurements and realistic expectations critical for sustaining producer engagement and decision-making.

To move the SHC from theory into practice, the authors highlight Nebraska-based initiatives that are integrating the SHC framework. One key effort is the Nebraska Soil Health School (SHS), a collaborative extension program led by Bijesh Maharjan, associate professor and extension soil scientist at the University of Nebraska-Lincoln (UNL). Initially launched as a statewide educational program, the SHS evolved into an "on-demand" traveling format that brings soil health expertise directly to local communities. These events emphasize peer-to-peer learning, hands-on demonstrations, and producer-driven discussions on both agronomic and economic considerations.

The article also details the formation of the Nebraska Soil Health Coalition (NSHC), an independent nonprofit organization designed to foster producer networks and community-based learning. The coalition uses a three-pronged approach that includes producer learning communities, demonstration-education clusters and stakeholder visioning groups. Its work extends beyond agronomy to explore the ROI of soil health, address social and behavioral factors influencing adoption and assimilating soil health benchmarking work with UNL and the USDA Natural Resources Conservation Service to gauge longitudinal progress.

Together, these efforts demonstrate how the SHC can be activated through education, collaboration and long-term measurement, reinforcing the idea that sustainable agriculture depends not only on science but also on strong human networks and adaptive decision-making.

Soil Health Stories: Don Gasper, Soil Health Pioneer and Lifelong Innovator

January 23, 2026
By Katja Koehler-Cole - Extension Educator,
Bruno Lena - Former Extension Educator,
Carolina Córdova - Department of Agronomy and Horticulture
Assistant Professor and Statewide Soil Health Specialist

Fifty years ago, when Nebraska farmer Don Gasper first began corn and soybean no-till planting into standing stubble, his neighbors were making fun of him for doing so. However, Gasper stuck with it — and then went further, adding diverse cover crops to his operation about 12 years ago. This shift has drastically reduced erosion on his sloping fields in Platte County, a fact in which he takes great pride.

Working with USDA Natural Resources and Conservation Service (NRCS) staff for many years, Gasper demonstrated the increase in water infiltration he attributes to leaving the soil structure intact and maintaining living roots in the ground. Recent soil sampling showed his organic matter concentration in the top eight inches of soil at 3.2%, which is significantly higher than typical for this area — a testament to Gasper's land stewardship. For reference, average organic matter in similar area soils is roughly 1.5-2%, making his improvement especially notable.

His curiosity and persistence not only improved his soils, but also inspired him to share these lessons with others. His belief in doing the right thing — caring for our greatest natural resource — translated into becoming a leader in organizing soil health and cover crop programs in the area. Gasper has worked with Nebraska Extension, NRCS and other agencies in the past to raise funds and organize local soil health events, connecting local producers with nationally renowned speakers such as Gabe Brown, Dwayne Beck and Ray Archuleta. As a result, many of his neighbors have now followed his example and adopted regenerative practices on their farms.

While Gasper has passed on much of his farm and leadership responsibilities, he remains deeply engaged and seeks opportunities to reduce input costs and increase yields. He and his children, who are now working alongside him, are always trying out new things.

One example is planting green, where the cover crop has not been terminated before planting the cash crop. The Gasper family is also experimenting with roller crimping as a mechanical method to terminate cover crops.

While these practices can sometimes reduce crop emergence or early growth, Gasper believes that with careful management, the benefits outweigh the costs and allow for reduced herbicide applications.

For soil fertility, Gasper is using chicken manure and compost mixed with biochar, which provides a more complete fertilizer and boosts beneficial soil microbes for his corn. Dryland corn yields on his farm were up to 220 bushels/acre in some years, demonstrating that managing for soil health does not mean sacrificing yields.

Gasper and his wife, Mary Lee, are most proud of their wonderful family of nine — although he said with a chuckle that it can be a challenge to farm with seven "kids". He hopes to pass on not only the farm, but also his conservation ethic and many observations from a lifetime of working with nature.

For Gasper, the greatest legacy isn't just higher yields or healthier soils — it's a way of farming that honors nature and nourishes future generations. He is truly a soil health pioneer and an inspiration for many.

Pasture and Forage Minute: Alfalfa Weevil Resistance to Pyrethroids

February 10, 2026
By Samantha Daniel - Extension Educator

Alfalfa weevil is a serious pest of alfalfa and can cause significant damage, usually in April and May before the first cutting. Reports of reduced efficacy of pyrethroids in Nebraska as well as confirmed resistance to pyrethroids in several western states led to a project in 2025 to determine if Nebraska weevil populations are developing resistance.

During the 2025 season, alfalfa weevil larvae were collected from 12 counties across the state, including the Panhandle, southwest, south-central and eastern Nebraska. The larvae were shipped live to the PREEC Entomology Lab in Scottsbluff, where they were exposed to the label rate of two types of pyrethroid insecticides: lambda-cyhalothrin and permethrin.

The study found that five of the 12 weevil populations had 90% or less mortality when exposed to lambda-cyhalothrin. This indicates that some Nebraska weevil populations may be losing susceptibility to lambda-cyhalothrin. In contrast, all 12 weevil populations had a 100% mortality rate when exposed to permethrin.

What does this mean for alfalfa weevil management?

Currently, there are only two insecticide modes of action available for chemical control of this insect: pyrethroids and indoxacarb (Steward). Because of this, resistance management and the use of alternative control methods is critical. Make sure to scout and only spray when thresholds are reached, use the highest labeled rates, rotate control measures to delay resistance development.

If you believe you have reached the treatment threshold for alfalfa weevil, contact your local extension office for confirmation and guidance for selecting the best management option.

Pasture & Forage Minute: Expectations for Old Hay

February 10, 2026
By Ben Beckman - Extension Educator

Putting up hay is really a way of preserving forage by limiting moisture. As long as hay stays dry, it stays stable. While we often assume older hay means lower quality, losses are usually less about age and more about storage — once moisture shows
up, quality begins to slip.

And we actually have proof of that. There are documented bales put up in the Sandhills in the late 1940s that were stored dry for decades, and even when tested in 2024, quality wasn't nearly as poor as you'd expect. That tells us age alone isn't driving quality loss — storage conditions are.

In real-world conditions, anytime a bale gets warm and wet enough, microbes
become active again. As they grow, they use the bale itself for energy, which means we're losing dry matter — that feed is literally disappearing.
That dry matter loss usually shows up first as a decline in TDN. Microbes go after the most digestible, high-energy parts of the plant, leaving behind more fiber and less usable energy.

Crude protein is more complicated. We can lose protein through leaf shatter or weathering, but because protein is measured as a percentage of dry matter, it doesn't always decline the same way energy does. Moisture and heating can also damage protein and reduce availability.

Finally, a lot of quality loss in outside-stored hay is concentrated on the outside of the bale — especially round bales, where a major portion of the total bale resides. Cows often sort and refuse the more highly weathered material, so actual intake can be much lower than a forage test suggests.

Despite that issue, forage testing older hay is critical — it's the best way to get an accurate picture of what your cattle are actually consuming and to make sound feeding decisions.