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*Illustration by Kristen Phillips.*

## Efficiency matters, both in your feedlot and for your cow herd

While cow-calf herds may depend on different traits to be efficient than feedlot cattle do, selection for both sectors doesn't have to be mutually exclusive.

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The efficiency of U.S. beef production represents an opportunity for continued improvement. The fact that we've increased beef production over the past five decades while facing a shrinking beef cow herd is truly astonishing. That said, with a growing list of genetic selection tools for traits that can impact efficiency, you can make improvements.

At the mention of efficiency, we tend to think of feed efficiency and our minds go to the textbook definition of feed conversion: pounds of feed required to produce a pound of gain. Efficiency is efficiency, right? Turns out, it's probably not that simple. Efficiency in a feedlot and at the cow-calf level are two very different things.

1. Feedlot efficiency tends to be a straightforward proposition driven in most cases by increased output.
2. Efficiency for cow-calf operations is more nuanced and complex, and tends to be influenced by our ability to control inputs.

As we compare them, it becomes evident that there are antagonisms that exist between the two segments. Luckily, modern genetic selection tools and reproductive technology provide producers with an opportunity to improve our ability to convert resources to high-quality beef.

## **Efficiency in the feedlot**

In the feedlot, there are two basic ways to achieve improved feed conversion. The first is to increase the rate of gain relative to the amount of feed consumed. For example, a steer with a tremendous appetite can still be efficient by gaining more weight per pound of feed consumed. The second path is by consuming less feed but still gaining the same. In this case, when comparing two steers that achieved similar gains, the one that eats less is more efficient. In both cases, feed efficiency is easy to grasp if we can measure both feed intake and weight gain.

Of the two paths to feedlot efficiency, the first tends to be the more desirable, as it results in fewer days on feed in addition to less feed per pound of gain. Resource availability drives the favorability of this option. While feed costs are always a concern, a feedlot generally has little restriction on feed availability. If cattle respond with adequate growth, there is almost no limit to the feed side of the equation. Therefore, cattle with robust appetites, high growth potential and good feed conversion are highly sought after.

## **Efficiency at the cow-calf level**

Efficiency can be difficult to measure at a cow-calf level, but it shouldn't be overlooked. In fact, an estimated 74% of feed resources used to produce a pound of beef are attributable to the cow-calf sector. This makes cow-calf producers a potential target in the beef industry's carbon footprint discussion and represents an opportunity for improvement.

Unlike their feedlot counterparts, cow-calf producers usually operate in a state of resource constraint. Stop and think about it. What are the conversation topics among cow-calf producers? They are typically topics like pasture conditions, hay yields and the weather because land and grass are coveted in the cow-

calf business. Thus, these daily conversations reflect a concern about limited land and feed resources.

Fertility and reproduction are common denominators to limited resources in cow-calf enterprise efficiency and profitability. Resource constraints not only impact the growth of calves, but also impact reproduction within a cow herd. Anything that negatively impacts reproduction has a direct and undesirable effect on efficiency. Therefore, cows selected for and adapted to your limited resource base are critical to cow-calf efficiency.

Contrary to popular belief, increased output in the form of heavier weaning weights is likely not the path to improved cow-calf efficiency. Despite an upward trend in genetic potential for weaning weight in most breeds, actual weaning weights at the ranch level do not appear to have improved on average in recent decades. This is likely due to growth potential beyond what ranch resources can provide.

Traits such as milk production and increased growth potential can increase needed inputs more than the corresponding increase in output, meaning both traits come at metabolic costs. Milk, while necessary to a certain point to produce a robust, healthy calf, can become a drag on feed and pasture resources and negatively impact reproduction. Selection for increased growth potential in recent decades has brought on the unintended consequence of a steadily increasing cow size. Ultimately, a heavier cow will require more feed resources to maintain.

## **Traits that drive cow-calf efficiency**

So if selecting for more growth and output is not the path to improved cow herd efficiency, what is? A great starting point would be understanding the traits that drive efficiency. Breeding and management decisions that improve the herd's reproductive rate and decrease the replacement rate hold the potential to yield the greatest returns.

A decision like choosing to run a crossbred cow and take advantage of hybrid vigor can yield significant improvements in reproduction and longevity. Emphasis on traits such as stayability and sustained cow fertility should yield longer-term improvements in overall reproductive efficiency. Taking your foot off the throttle concerning growth traits, particularly for breeding decisions resulting in replacement females, allows an increased focus on traits that influence cow carrying costs. Admittedly, it's unlikely the industry will reverse the trend of increasing cow size or selection for increased growth. The packing industry continues to send the economic signal that big, high-quality carcasses are what they want.

## **Tools to build an efficient cow herd**

Genetically speaking, there are tools available to build an efficient cow herd that still meets industry standards. While some genetic correlations and antagonisms can make this difficult, it is not impossible. With the right emphasis in sire selection, you can make improvements in carcass traits while keeping traits like mature weight and dry matter intake (DMI) in check. Not everyone needs a small cow, but a thoughtful eye on cow efficiency-related traits in your next bull purchase could add the next dollar for terminal performance to your calf crop without adding cow maintenance costs.

Another option to address overall efficiency is sexed semen – a tool to decouple maternal and terminal breeding decisions in a herd. Instead of trying to accomplish everything with one bull, sexed semen allows you to make laser-focused mating decisions to create replacement females and enhance those calves destined for the supply chain. This benefit of sexed semen makes managing the genetic correlations and antagonisms a much simpler conversation.

Efficiency across all segments of beef production should be everyone's goal; it's a critical piece of the economic viability puzzle. It's unlikely that many producers are suddenly going to find themselves in an environment of unlimited land and forage, so making the most of your current resources is critical to sustainability. Plus, it seems inevitable that the efficiency and carbon footprint of your cow herd will receive continued scrutiny from outside entities. So working toward a documented, efficient herd may set you up for future premiums or market access.

Whatever your motivation, don't get caught admiring the progress our industry has made. Take hold of the technology and tools available to build upon the beef industry's legacy of efficient food production.

*References omitted but are available upon request by sending an **[email](mailto:editor@agproud.com)** (**<mailto:editor@agproud.com>**) to the editor.*