Dump the Hayburners

Program your herd with genetic tools for efficiency.

Story & photo by Kasey Brown, associate editor

Hayburners. According to my dad, that meant horses. They used up hay and produced nothing to show for it, he reasoned. He'd cringe to acknowledge that cows can be hayburners, too. You've seen big old cows pushing a ton. They sure eat a lot of hay. Yes, they produce big calves, but the real question is: Are they profitable?

The question of efficiency is multifaceted. There is no simple answer. Can you select for a cow that just eats less hay? Sure. Will she be able to have a calf every year and support it to pay her way? Maybe not. There is no silver bullet to finding cows that can save on hay costs while producing big, profitable calves.

The real answer to efficiency is profitability. The whole picture must be taken into consideration, and it must be balanced, says Stephen Miller, director of genetic research with Angus Genetics Inc. (AGI) and the American Angus Association.

What counts as efficient?

Nutrition is the biggest cost for the cow herd, accounting for nearly 70% of total costs; however, without adequate nutrition, a cow can't produce a calf. Environment plays a big role in efficiency. Cows must thrive in their environment to produce a calf every year.

A team of USDA Agricultural Research Service (ARS) and University of Nebraska (NU) researchers, including Andrew Roberts, Rick Funston, Travis Mulliniks, Mark Petersen and Mike MacNeil, says efficiency of beef cattle production requires a balance between amount and cost of nutritional inputs with prolonged optimal output. She has to stay in the herd to continue producing calves.

Do the cows maintain their body condition without supplementation? The team's research on beef cow efficiency noted that being able to keep supplemental feed costs down shows distinctions between biological and economic efficiencies in the cow-calf phase compared to other segments.

> Reproductive efficiency is the key to maintaining the profit balance.

The team points to cows that take in more calories during the grass-growing season and gain enough to exist during the winter with less supplemental feed. These cows obviously show more efficiency. Determining who those cows are is the harder question, and research continues.

Dry-matter intake (DMI) and residual average daily gain (RADG) are measured in the postweaning and growing phase, says Kelli Retallick, AGI and Association director of genetic service. Many people want to take

those numbers and relate them to the cow herd, but they can't necessarily be applied like that. These two measures don't extrapolate equivalently to the cow side. Some research suggests postweaning gain and intake measure work, but others suggest they don't. Unfortunately, there's no black-and-white measure for cow efficiency.

"People have their own definition of efficiency. It's more than just how much they eat," Retallick says. "To me, an efficient cow has some more layers than just how much she eats. Does she get bred back? Does she have a calf every year? Does she calve early? There are all of these other things that make a cow herd efficient."

The ARS-NU research team, Miller and Retallick all agree reproductive efficiency and longevity are the truer selection criteria for efficient cows.

Table 1: Percentile Breakdown — Current Sires

Top percent	HP	MW	$EN
5%	15.5	69	18.22
10%	14.3	60	11.23
15%	13.5	54	7.15
20%	12.9	49	4.28
25%	12.4	45	1.94
30%	12.0	41	-0.01
35%	11.5	38	-1.80
40%	11.2	35	-3.33
45%	10.8	32	-5.05
50%	10.4	29	-6.52

SOURCE: American Angus Association *Spring 2019 Sire Evaluation Report.*

Genetic tools for efficiency

Determining the reproductive efficiency of a cow can take several years, but there are tools available to make better predictions.

Mature weight (MW) is a tool for which they suggest using both the expected progeny difference (EPD) and actual data. Miller and Retallick both vehemently urge cattlemen to weigh their cows.

People are great at weighing their calves, but for some reason those scales aren't measuring the cows, Miller laments. Yearling weight doesn't correlate well enough to mature weight to explain all the variation.

It is too easy to assume a cow's weight, but the nutritional requirements for a 1,200-lb. cow differ from those of a 1,400-lb. cow. Retallick notes thin, large cows will slip in the calving season. They may be eating less, but they aren't providing profit through a calf to fill the other side of the equation. To be efficient, she emphasizes, cows must have calves.

Body condition scores (BCS) are also useful to note whether a cow is keeping her condition. Observe BCS often to track whether she does so with less supplemental feed.

Breeders have said they want longevity EPDs to select for females that will stay in the herd longer. Miller says an Angus longevity EPD isn't available yet, but heifer pregnancy (HP) and foot score EPDs — which should be available in 2019 — are two large factors in longevity. According to recent AGI survey information, pregnancy and feet issues are two of the largest reasons females leave the herd.

Heifer pregnancy measures the likelihood of a sire's daughters becoming pregnant compared to daughters of other sires. Miller admits it has a lower heritability than some traits, but selecting high-accuracy bulls with higher HP allows for faster genetic progress.

"Genomic information adds a lot of accuracy to heifer pregnancy EPDs. You've got this group of heifers at weaning time. They don't have heifer pregnancy records yet. Which ones will you keep to breed?" asks Miller. "The heifers with higher HP genomically enhanced EPDs allow you to make more progress for fertility, which is part of an efficient cow herd."

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Contrary to popular belief, the energy value selection index ($EN) might not be your best bet, but it is a tool, says Retallick. It attempts to put an index summary of what cows will eat and the amount of money in feed saved. A higher number for $EN is the goal; it translates to higher cost savings. However, it only measures cow size and milk yield.

Retallick and Miller emphasize not to singularly select for this trait because doing so will result in moderating the cow size with less milk — unless that is your overall goal.

Miller says it is a simple index, and he worries people read too much into it. It is not predicting intake. There is potential that cows with a higher $EN are more efficient because they are smaller and milk less, but not necessarily, he warns.

However, the trend over the years for Angus females has been to get bigger because of selection for curve-bending growth traits — having less birth weight but large weaning and yearling weights.

Miller adds, "We want to bend that curve on the other side, too. We want to follow cows that don't turn into the big ones."

He shares data from the U.S. Meat Animal Research Center (USMARC) revealing most breed stereotypes cattlemen were taught in school are now wrong. Recent data shows that Angus cows are the biggest. Miller says this proves genetic selection is huge. Selecting for high growth in calves has also resulted in a larger cow herd.

High-accuracy genetic selection is a way to add efficiency in your herd, and it's all about providing balance. Reproductive efficiency is the key to maintaining the profit balance. Know the size of your cows so you are meeting their needs and not exceeding them. With time, you may reduce the hayburners in your own herd.

Table 2: Percentile Breakdown — Current Dams

Top percent	HP	MW	$EN
5%	15.0	64	17.18
10%	13.9	55	11.90
15%	13.2	49	8.69
20%	12.7	44	6.22
25%	12.2	41	4.24
30%	11.8	37	2.47
35%	11.5	34	0.84
40%	11.1	31	-0.64
45%	10.8	28	-2.11
50%	10.4	26	-3.52

SOURCE: American Angus Association *Spring 2019 Sire Evaluation Report.*