



Selecting For Feed Efficiency to Help Manage Drought

Marcy Ward, Extension Livestock Specialist

Estimating how much feed it takes to create one pound of meat is the most common measure of efficiency in the animal production industry. This is easily calculated in a controlled setting where known amounts of total feed are distributed. The cattle industry is unique in that almost 100% of all cattle are on native range or irrigated pastures at some point in their life. Beef cows and bulls generally spend their entire life on range. Total intake in this situation cannot be measured. Therefore efficient use of feed (forage) needs to be measured in other ways. Information provided in this article is designed to help producers best identify those traits that can result in improving forage utilization and cow longevity.

Genetic selection, record keeping, and culling criteria are some of best tools available in measuring and improving herd efficiency. Culling should be one of the first indicators of herd efficiency. Categorize what is being culled and why.

1. Open/non pregnant animals
 - a. Is she old?
 - b. Is she thin?
 - c. Is she sick?
2. Age
 - a. If the average age of cows culled from the herd due to non-pregnancy is less than 4 years old, this could be a sign of poor efficiency.

Then evaluate what might be the cause by asking:

 - i. Nutrition? Disease? Bull Distribution? Genetics?

Record keeping is an important part of the culling process. Taking notes on animals that have been culled help with future management decisions. In addition to culling, other important records related to herd efficiency include:

1. Body Condition Scoring = nutritional status
2. Stage of Pregnancy = reproductive efficiency
3. Health issues
4. Weaning weights

Decline in body condition, reproduction, and weaning weights could all be indicators of poor feed efficiency in the cow. Conversely, a cow that has demonstrated the ability to maintain body weight and become pregnant in harsh conditions could also be evidence of her efficiency.

Effective use of forage has been shown to be approximately 35% heritable. Therefore, genetics and breeding could play an important role in improving herd efficiency, productivity, and cow longevity. The quickest way to make progress in feed efficiency in your herd is through bull and replacement heifer selection.

Purchasing a bull:

When at all possible, find bulls that have had actual feed intake data collected on them. Specifically, look at a bull's ability to convert feed to gain and his average daily feed intake compared to others bulls in his contemporary group. Table 1 can show the difference between two bulls fed in the same pen and conditions.

Table 1. 2020 Tucumcari Bull Test Data of Two Angus Bulls from Same Ranch

| Item | Bull A | Bull B |
|--|--------|--------|
| In Body Weight (lbs) | 710 | 718 |
| Average Daily Intake (lbs) | 20 | 23.5 |
| End Weight (lbs) | 848 | 814 |
| Feed Conversion (lbs feed:1lb gain) | 5.12 | 7.52 |
| Potential Feed Savings(lbs)/yr | 1278 | |

In this scenario, Bull A ate 3.5 lbs less feed per day than Bull B, gained more weight, and could potentially eat 1278 lbs of forage less a year than his herd mate. This type of information demonstrates how much difference there can be between animals.

If raw data is not available, expected progeny differences (EPDs) are the genetic parameters that indicate a bull's ability to pass on certain traits to his offspring. Currently only three breeds offer feed efficiency related EPDs; Angus, Red Angus, and Hereford.

EPD Values for Efficiency

DMI = Dry matter intake potential of offspring. A negative number of DMI means this animal requires less intake than the breed average for body weight maintenance.
(Angus, Hereford, Red Angus)

rADG = Residual average daily gain is a value only found in the Angus breed. The more positive this number indicates the animal will have greater growth and performance on the same amount of intake as the breed average.

When Selecting Heifer Replacements:

In most cases genetic information, such as EPDs, are not available to use as a tool when selecting replacement heifers from within your own herd. But there are some general rules of thumb and selection criteria that could improve herd efficiency and cow longevity.

Age of heifer at weaning: For a standard 90-day breeding season system, the older heifers are out of cows that bred early in the previous season, indicating good fertility. These animals will also be 2 to 3 months older for their first breeding season. Research shows, if a heifer has had at least one estrus cycle before breeding, her pregnancy rates are higher.

Size matters: Big growthy heifers can turn into big cows. Just because she is heavier at weaning, does not make her the best candidate for being a herd replacement. The more frame and body weight an animal carries, the greater their maintenance requirements. During times of drought, cows with higher maintenance requirements lose the most weight, and are generally unable to breed back in these conditions.

Dam contribution: Mature body weight and pregnancy rates of the dam should be considered when selecting replacement females. Pay attention to those cows that continue to bring a calf to the weaning pen, regardless of forage condition. A combination of her genetics and the use of known efficiency genetics on the bull side, can rapidly improve herd productivity.

Herd reduction due to drought is one of the biggest threats towards a rancher's ability to stay in business. Combining good record keeping, selecting females that are older at weaning and are moderate framed and using bulls that carry desirable genetic and performance traits in efficiency could potentially help alleviate the need of expansive destocking during times of drought.

The College of Agricultural, Consumer and Environmental Sciences is an engine for economic and community development in New Mexico, improving the lives of New Mexicans through academic, research, and Extension programs. New Mexico State University is an equal opportunity/affirmative action employer and educator. NMSU and the U.S. Department of Agriculture cooperating.