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How do you define efficiency in your herd?

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With cost of livestock production increasing each year, producers are continually searching for a cheaper, more efficient way to produce their product. Any beef producer who has filled up a diesel pickup truck or been to the local feed store lately has a good understanding of just how much input costs have climbed in recent years. Improving the efficiency of your operation requires several things, but perhaps most important of these are measurements and records. The saying "you can't manage (or improve) what you don't measure" is very applicable to the discussion of measuring efficiency of a beef cattle operation.

The definition of efficiency differs for each herd, but most producers can likely agree that the best measure of efficiency is a relationship between inputs and output traits. An efficient calf, or cow, or herd has a low level of inputs relative to outputs. It is also important to remember that an efficient animal for one producer in a certain environment might not be considered efficient when placed in a different production system or environment. Therefore it is important to tailor your definition of efficiency to your herd and production level.

For the cow/calf producer, it is interesting to know that regardless of cow type approximately 73% of ME consumed by a mature cow is used for maintenance (Ferrell and Jenkins, 1985). Therefore, large portions of feed expenses for the cow/calf producer are directed just to maintain the cow, not accounting for lactation, growth, energy storage, or reproduction. Therefore, reducing cow maintenance requirement may be an effective way to improve cow-herd efficiency by allowing more of consumed energy to be directed toward other sources, such as lactation, or fat storage, and may also be an effective way to improve profitability. During periods where intake is limited, i.e. drought or winter, those more efficient cows would be more able to maintain their weight, and/or condition perhaps due to lower maintenance requirements. There are many factors, such as milk production, temperament, maintenance requirements, or tissue accretion, which may affect why some cows are more efficient at converting available forage resources to pounds of calf weaned. It is important to identify cows that are more efficient in converting available forage resources into more pounds of weaned calf, while still maintaining adequate condition to ensure rebreeding.

For all groups of cattle, feed costs are the single largest variable expense. However, previous selection strategies have been focused primarily on increasing growth at weaning or other output traits. This strategy neglects the fact that it often costs more feed to get that increased weight gain, and might not be the most profitable strategy. Selection for improved feed efficiency in growing calves could reduce feed required for gain, and thereby improve profitability for an operation.

The most common trait used to is feed conversion ratio (FCR), which is simply the ratio of feed intake to ADG. One potential drawback of using this trait is that selection for FCR would select for cattle with an increased growth rate and ultimately increased mature body size thereby increasing maintenance requirements. Another trait has been proposed to measure feed efficiency that gets around this problem. Residual feed intake (RFI) is the difference between an animal's actual feed intake and the amount of feed an animal is expected to eat based on its size and growth rate, and measures variation in feed intake independent of growth rate and mature size.

One major drawback to measuring feed efficiency for most beef producers is the need to have individual feed intake of animals, which can be costly. However, in recent years, many options have become available for producers to have bulls or females tested for feed efficiency. Many breed associations have recognized the need for an improvement in efficiency, and EPDs or genetic tests are currently available for many breeds of cattle to select seedstock based on this criteria.

For the stocker producer, efficiency may be best considered relative to costs. This is where a detailed budget becomes a vital part of calculating the efficiency for a producer. Documenting expenses for each group of calves is important to accurately calculate profits. There are a few calculations that are helpful in determining how efficient an operation is at adding value to calves. In a simple calculation, cost of gain accounts for a great deal of production and market information. Cost of gain can simply be calculated as the total cost to put on that gain ÷ total gain. Breakeven price is also an important piece of information to know. Breakeven price is simply the price you need to receive for your cattle in order to break even on the sale. This is a very important number for stocker producers to know to ensure that cattle are profitable. Recently, the MSU Extension Service released an app for mobile devices that assists producers in determining breakeven in price, breakeven out price, and breakeven cost of gain. The app can be found at https://itunes.apple.com/us/app/msuesbreak-even/id580535520?mt=8.
Breakeven cost of gain can also be calculated as follows:

$$\text{Breakeven cost of gain} = \frac{(\text{Expected sale weight} \times \text{Expected sale price}) - (\text{In weight} \times \text{In price})}{(\text{Expected sale weight} \times \text{In weight})}$$

Regardless of how you choose to define efficiency for your farm or ranch, it is important to strive for the most efficient production system possible. The continuously rising costs of inputs are not likely to disappear any time soon, so to insure that your farm stays profitable for the future producing the most product with the least input is a valuable strategy.

For more information about beef cattle production, contact an office of the Mississippi State University Extension Service, and visit msucares.com/livestock/beef.

References:

Ferrell, C. L. and T. G. Jenkins. 1985. Cow type and the nutritional environment: Nutritional aspects. J. Anim. Sci. 61:725-741.