

## Production Efficiency

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Lots of talk and interest in cattle feed efficiency now days. The economic impact of improvement on an industry basis could be huge and is driving investment in research and development. If your cow herd could perform the same on 5% less feed, a savings of about \$25/cow extrapolated over 950,000 cows in state calculates to almost a \$25 million impact in ND alone not even considering the backgrounding and feeding sector. RFI feed efficiency testing of bulls, progeny testing steers on feed, and identifying DNA markers being used in feed efficiency genomic tests are all part of the industry response to opportunities for improving production efficiency.

Thinking about this challenge and opportunity, a couple of thoughts come to mind. Firstly, the old axiom of fitting a cow herd to the environment and mating to market focused terminal selected sires still is a recipe if implemented well to achieve significant improvement in feed and economic efficiency. Fitting cows to the environment means different things to different people of differing definitions of the environment. It begins with identifying feed and management resources and climatic restraints. In western ND it might be grazing much of the year on native pasture with cyclic quality and moderate forage availability coupled with a medium quality hay dominated wintering period with limited targeted brought in feed supplementation of primarily minerals or a bit of protein. Management is constrained by labor requiring latter calving often in pasture and minimizing individual problems (calving difficulty, lameness, nursing, etc.).

In this situation the biological type for cowherds might be characterized by cows which graze and utilize pasture at a high level of production per acre when coupled with grazing management, maintain health condition and regularly breed on the basic operations feed when stocked appropriately, don't require individual care or labor for problems and are easy to handle, and therefore have long productive lives. They are likely lower in milking ability than current averages, display good calving ease, are very moderate in mature size displaying good rumen capacity, and are of a heritage where inherent fertility good udder structure and soundness have been selected for.

Genetic sources for cowherd traits and functionality are probably not places leading in milk, growth, carcass, and \$feedlot indexes. These might be the places to originate bulls to mate to the maternal cowherd to maximize market value and feedlot acceptability of produced feeder calves. Especially if aligning to a program creates a marketing outlet targeted to a higher value sector of the beef industry which has become more specialized through value based fed cattle marketing and beef brands.

Secondly in trying to identify the application of all the current developments in feed efficiency traits, there needs to be some caution if results of selecting for feedlot determined RFI will bring unintended consequences to an adapted cowherd. As an industry that has made tremendous advancement in feedlot performance and associated feed per gain conversions, we have realized the need for cattle with big appetites and ability for high intake. Since the first portion of what an animal eats is to meet biological maintenance, the more they can eat beyond this can be used for gain and the gain per feed goes down as the feed used for maintenance becomes proportionately less.

We have found especially in high feed cost times, some small restriction on intake still allows high feedlot gains but at an improvement in efficiency. It appears these high appetite cattle can over consume quality rations beyond what they are capable of utilizing in growth. RFI testing let's use identify overeaters and those which eat more closely to what their potential is to grow. While this might be a good thing for the feeding industry, it may or may not be for range cowherds often limited by forage quality to meet basic nutritional needs. High intake of low quality feed can be desirable to get almost any level of production and if some overconsumption results that is not well utilized the cost of this feed resource may be minimal. The risk is if too much selection is placed here (while conserving feed under good feed situations) we can have difficulty in actually meeting needs under lower quality feeding situations where gut capacity and high intake are still most economical. We do not want to lose fleshing ability and consistent reproduction.