

Total Mixed Rations

Increasingly limited resources call for more efficient feeding systems.

Story & photos by **Paige Nelson**, field editor

Today the beef consumer demands sustainability and efficiency. Available grazing acres are on the decline, and feeding byproducts to cattle of all ages has never been a more popular idea. Research continues to investigate the economic potential of full and semi-confinement for cow-calf operations.

In his “Ridin’ Herd” article featured in the February 2015 *Angus Journal* (see pages 122-123), Rick Rasby, University of Nebraska–Lincoln Extension beef specialist, showed that a semi-confinement system for lactating cows, which included drylotting and grazing cornstalks, proved to be less expensive than traditional pasture grazing and protein supplementation.

In his address at the Learning Lounge booth at the National Cattlemen’s Beef Association (NCBA) Trade Show during the 2015 Cattle Industry Convention, Don Close, vice president of the Food and Agribusiness Research and Advisory Department for Rabobank, shared more data on confinement systems.

Close said revenue per cow per year in conventional operations was in the \$258.50-\$220.00 range. Revenue for semi-confinement was \$324.50; revenue for older cows in confinement was \$363.00, and revenue for younger cows in confinement was \$253.00.

Research on managing cows in confinement will continue to trickle in, and more efficiencies in the cow-calf business will be discovered. One of those efficiencies delivers byproducts, feed waste reduction and increased cattle nutrition — the total mixed ration (TMR) mixer.

Mixer function

A TMR mixer is exactly what it says it is. Its bucket-like shape allows all kinds of feeds to be dropped in, while its horizontal or vertical screw(s) act as a dual-purpose mixing spoon/cheese grater to simultaneously cut and mix multiple feeds.

Adjunct professor of ruminant nutrition at Brigham Young University–Idaho, Zak Miller, also a former Cargill nutritionist, says his most preferred feed-processing and -delivery system, without a doubt, is the TMR mixer.



► Eloy Mendoza of Broken Arrow Cattle, Rigby, Idaho, purchased this used TMR mixer two years ago. He has replaced the knives once and calibrated the scale twice.

“The mixer’s ability to utilize multiple ingredients to provide consistent feed and form to the cattle, which alleviates sorting and allows feeds that are otherwise hard to use, is the mixer’s most valuable trait,” he asserts.

There are typically two types of mixers on the market today: vertical and horizontal. In Miller’s opinion the horizontal mixer is better for mixing high-grain diets. The vertical excels in high-forage diets and tends to need less maintenance.

Most mixers come with a built-in scale, so operators know the exact amount of each ingredient.

Because of its ability to combine different feedstuffs into one feed form, Miller says it allows the operation to incorporate new feedstuffs, as well as reduce feed costs.

“In the Midwest, with the advent of ethanol, wet distillers’ grains have been huge. In Idaho, potato slurry is available. If you go to California, in the fruit and nut industry you get to have hundreds of different options to put through it. Those are all things that only a mixer really can allow you to utilize,” Miller says. “If you don’t have a mixer, it’s really hard to utilize the high-moisture-content feeds or a grain type of a product because there’s no way to ensure the cattle have to eat the whole mix versus

just picking up the ice cream and getting themselves sick.”

Miller adds that by feeding several feeds, producers are able to then take a nutrient vs. ingredient approach. In 99% of the cases, he says, this means feed costs will be lower.

“By using multiple feedstuffs, there’s almost always going to be a savings because you can take advantage of efficiencies,” says Miller. “There is no such thing as one crop that meets the nutrient requirements of a cow perfectly, so the more you can take advantage of the positives of different types of crops, that’s going to save you money, both in performance and in total cost.”

Blending different feeds also alleviates palatability and intake concerns, Miller explains. He says producers using a TMR don’t have to pay premium prices for a really palatable mineral package. The cattle don’t have to be attracted to the supplement by a need for sweet because the forage and grains take care of the overall palatability.

Mixing in motion

In 2013 Eloy Mendoza, partner/owner of Broken Arrow Cattle, a custom cattle-feeding operation at Rigby, Idaho, purchased his first TMR mixer. It was a used, 5-year-old Supreme 900 series mixer mounted on a 1980-something Ford truck. Mendoza has a cow-calf operation, as well as a feedlot, but everything eats out of a bunk. Before the mixer, he was using what he calls a grinder truck or a bale processor that wasn’t doing as

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— Zak Miller

for Beef Cows

35 Keys to Success

Equipment

much mixing as it was spitting out a little of this and a little of that.

He wanted more consistency. He recalls that with the bale processor, the cattle could easily sort through the feed and eat what they wanted. The TMR took that option away.

“Probably, the thing that makes me the most happy is that I haven’t had any major repairs on it, other than just regular maintenance. For a used mixer, it hasn’t given us a day’s worth of trouble,” he says.

In 15 minutes Mendoza can have the feed mixed and flowing into the bunk. In another 15 minutes, he is empty and heading back for another load.

For the past two years, Broken Arrow has used the mixer twice a day for about 200 days out of the year. This year, Mendoza foresees using the mixer all year long. The mixer has allowed him to expand his operation. He has now handled everything from developing registered-Angus bulls to heifer development to cull cows, as well as his traditional feeder-calf and cow-calf segments.

“We can do just about anything. Whatever our nutritionist tells us to put in there, it goes in and mixes up. Whatever the customer wants, we can do it,” he explains.

Feeding during the Idaho winter hasn’t seemed to be a problem for Mendoza. In fact, he thinks he can get an even better mix and better intake when his straw bales are frozen.

“Last year we got a bunch of straw that was just some top bales that people used to cover their haystacks. It wouldn’t go through the straw spreader, so we decided to start feeding it,” he recalls. While it did not look appealing, the cows “went for it.” He also took note that it ground better if it was somewhat frozen.

Now Mendoza’s straw-feeding paradigm has shifted. This year he plans to use the bright, clean straw for bedding and feed the darker straw, which is cheaper anyway.

Mixed results

Performance. “If you give a little kid a plate with different foods on it, they are going to selectively eat the sweetest, best-tasting foods first and save the vegetables until last. Cattle aren’t much different, and by forcing them to consume everything at an equal rate, it aligns to a better digestive process, more health and a more efficient conversion of feed to matter, whether it be milk, calf or meat,” explains Miller.

TMR mixers, he says, improve performance because they can almost

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► In this TMR mixer, two vertical screws work in conjunction to mix and process long-stem hay, corn silage, straw and ground wheat. TMR mixers make a consistent ration that reduces the animal’s ability to sort when eating.



► Prior to using a TMR mixer, Eloy Mendoza of Broken Arrow Cattle was using this grinder/bale processor truck to try to feed a mixed ration to his cattle. Even after premixing the feed and pushing it through the roller blades, the cattle were still able to sort the feed.

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guarantee that the first bite and the last bite are the same.

As more registered-Angus producers develop their own bulls and buy back their customers' calves, Miller says, the TMR mixer adds even more value. The mixer allows the producer to take advantage of accurate data, which then translates back to genetics.

"Instead of feeding them what you can feasibly, you can feed them based on what their genetic potential is," he states. "If you need to increase the quality of the nutrients because you've got a high-quality animal, a mixer will allow you to do that. In my mind, the better the animal, the more valuable the feeding system becomes. A TMR mixer becomes even more valuable because then you can match genetics with environment more efficiently and more effectively."

Savings and revenue. By feeding in a bunk using a TMR mixer, Jaylor, a TMR mixer manufacturer, estimates a 30% reduction in feed wastage in its "Beef Cow-Calf TMR Economics" March 2012 news release. The release states annual cost of conserved and purchased feeds should be reduced by 10%-15%. It also says that pounds of calf produced per year generally increases by 5%-15%.

Although, Mendoza has never done the math on how long it took for his mixer to pay for itself, he says it didn't take long. His mixer has allowed him to expand his operation, as well as feed nontraditional feeds like potato slurry and potato-straw silage. He is now in the

process of buying a second mixer as a backup and to decrease his overall feeding time.

Mixer size. Mixers come in all sizes to meet all production needs. They can be mounted on trucks, pulled behind tractors or be self-propelled like Jaylor's mini-mixer series.

"I've seen mixers pulled behind 50-horsepower tractors. You can get mixers so small that you can mix up 50 pounds at a time. There is a size for whatever you want to make fit," says Miller.

Infrastructure. There is no rulebook saying TMR mixers must be used in conjunction with a feedbunk or manger. Some operations choose to feed right on the ground. That's their choice, not mine, says Miller.

When Ken Dunn of H.D. Dunn and Son Angus Ranch, Teton, Idaho, was studying how to make his operation a more viable place to develop his registered-Angus bulls and heifers, one of his first purchases was a TMR mixer. He wanted to test his operation's ability to feed silage, hay and potato waste. The TMR was no problem, but the feed wastage was.

C.L. Simper, herd manager, calculated that when feeding on the ground using the TMR, the operation had a 22%-per-day feed wastage issue. The next logical step for Dunn was to invest in a feedbunk system.

Miller advises producers to evaluate their infrastructure.

- ▶ Is the infrastructure already in place?
- ▶ Is it feasible to create the infrastructure?

"I don't think you necessarily need a bunk.

You just need a way to keep [the cattle] from standing in the feed. That can be as simple as an electric fence to a rudimentary manger. That's one of the beauties of beef producers, their creativity knows no bounds, so I believe where there's a will, and some ingenuity, there's always a way with cattle producers," he emphasizes.

Maintenance. Mendoza hasn't had any trouble thus far with his used mixer, but he has also kept up on maintenance. He calibrates the scale once a year and has replaced the knives on the vertical screw once. Knife replacement alone cost around \$2,000.

Thinking about mixing

"To move into a mixer isn't just one piece of equipment. It's a whole philosophy and a whole way you manage your operation," Miller states.

It is no secret pastureland is being converted to cropland and houses. Feed costs will be ever dynamic, and feedlot efficiencies are unmatched by grazing strategies. TMR mixers allow greater diversification in feeding options and a consistent mix of feeds. However, mechanization brings associated costs and changes to traditional beef cow management. The dairy and feedlot industries seem to have embraced TMR technology. Will the cow-calf segment be next?



Editor's Note: Paige Nelson is freelance writer and cattlemaster from Rigby, Idaho.



▶ After feeding on the ground and in ground feeders for several years with his TMR mixer, Ken Dunn of H.D. Dunn and Son Angus Ranch, found he could significantly reduce feed wastage costs by building a bunk to feed bulls and heifers during development.