



by Steve Martin

TMRs and human nutrition.

NO MATTER where you may fall in the political spectrum, we should all be mindful of managing natural resources. But when it comes to this topic, those of us who make our living in agriculture often feel put upon by consumers and others who are not connected in any way to food production.

There are two types of resources: renewable and non-renewable. As the world population grows, perhaps ways to better manage them is an area where we can continue to improve. We have all seen the ag advocacy posts on social media telling the story of how many fewer cows it takes to produce even more milk or beef than it did 50 years ago. This is awesome and is a testament to the research, technology and good business practices employed by our industry. How can we connect this idea of doing more with less to feeding a growing world population?

There will be more people over time and their appetite for high quality nutrition is growing. There is a sustainability story here that needs to be told and practiced.

Cows “upcycle” feeds

Social media is buzzing of late with information for the consumer that touts the “upcycling” ability of ruminants to take low quality, fibrous things and other refuse and turn them into the two most important parts of a cheeseburger. Let’s discuss a few of the details of how this really happens in everyday animal feeding.

I will offer the term “primary” versus “secondary” feed ingredients. Corn and soybeans would be good examples of primary ingredients. These are things with nutrients ready to enter the human diet. Secondary ingredients would be things left over after humans have pushed their chairs back from the table. It can actually be plate waste from restaurants that is processed into animal feed, but I am mostly referring to things left over after primary grains have been processed or fractionated.

A soybean may offer the best ex-

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ample. Soybeans are grown around the world to meet the needs for protein in human diets. The valuable oil that is in a soybean is also needed for numerous human-food applications. It is true that the meal left after extracting the oil is a common and valuable animal feed protein.

But for this discussion let’s say it was further fractionated to retrieve the soybean flour that can be used in human foods. After this step is made we have oil for humans, protein for humans, and fiber for ruminants.

Other oilseeds like canola or cottonseed lean even more heavily on animal consumption after the primary ingredient fractions have been



sent to a human table, a diesel tank, or even to a sewing loom. Oilseeds other than soybeans tend to be higher in fiber and less interesting for human protein needs. The opportunity from oilseed is to use high fiber/high protein meals for nutrient-rich animal feed.

Other grains like wheat, corn, or milo are a little different. The processing goal with these is to remove the starch for the primary need by humans. Maybe it is corn grain to produce corn sweeteners, or ethanol, or it may be wheat that is destined to become flour. In either case the removal of much or even all of the starch for a primary human need results in a concentration of protein and fiber in the leftovers, which are very valuable in dairy diets.

This is a great story we need to brag about a little more. Much of the effort to communicate to consumers about a beef steer’s ability to turn grass into a rib eye steak centers around forage production from marginal land. This is good. But in the dairy nutrition world the big story is more related to grain by-products.

You might be enjoying an awesome basket of bread before a nice meal with friends. After a comment about how wonderful this bread is, what if you attempted to connect that bread to a hard-working wheat farmer in the Great Plains? Or maybe we could talk about the part of the wheat kernel that didn’t make it into the bread.

“What do they do with all of the other stuff?” should be the question we pose to a consumer. “No they don’t throw it away,” we should say. “It is wisely used as a part of a balanced dairy cow diet.”

It is impossible to have this conversation with a consumer without mentioning the power of rumen fermentation. I like to frame-up this topic by talking about building blocks. We need carbon and nitrogen as building blocks to make milk. The carbon can come increasingly more from grain by-products left over from human food processing. And the protein is an even better story!

Most consumers don’t think much about amino acids in their diets. We should find a way, though, to brag on cattle’s ability to convert the lower-

quality amino acids in grain by-products into more valuable amino acids in the protein found in milk.

Consider the low-quality protein in wheat straw and corn distillers grain that are abundant in a place like western Kansas. These can be fed to a dairy cow to produce milk that can be dried into high quality whole milk powder, which has the quality amino acids needed for human nutrition.

It is the same nitrogen molecule that was in the wheat and corn by-product, but inside the cow it was ripped apart and rebuilt. Now this upcycled protein in the whole milk powder can be put into a bag and shipped anywhere in the world. Once there it can improve the future of the next generation through better nutrition. That is something to feel good about!

This is a story we need to tell better and more often to the public. If cows were not involved in this process, what would become of these leftovers from human food processing? There are millions of tons of this material. I suppose it could be potentially used for ethanol production, but feeding people and insuring proper human nutrition is a much more noble task.

How can we better tell this story? We should not be bashful, but brag on this topic. Everyone is in favor of feeding hungry people around the world. The part we need to emphasize is the connection of sustainability through upcycling. Should we not revere the cow and her unique design for this upcycling? Let’s brag a little more on the cow and our system of feeding humans first and letting the cows eat second. Then, in what is almost like magic, humans get to eat again when enjoying some tasty dairy products.

It takes a complicated grain processing infrastructure, thoughtful ration modeling, high quality dairy farms, and milk processing to make all of this happen. They are all working together in a win-win relationship, with each needing the other to meet the final goal of delivering solid human nutrition. It all starts with putting a seed in the ground and it ends with a full belly. It’s a great story. Now let’s tell it. **WEST**