

How, What Will We Feed Cattle?

by **Troy Smith**

People known to be deep thinkers are pondering the future of cattle feeding. It's a risky business, you know, and anyone anticipating long-term involvement has to be thinking about the sustainability of cattle feeding as we know it.

Of course, the industry "as we know it" is a product of evolution. It has changed. Just ask the industry's silver-haired veterans about feeding cattle 40 or more years ago. But what changes might be coming? How and what will cattle be fed in the next 10, 20 or 30 years?

Some far-sighted folk think a continuing struggle to manage feed costs will spur further innovation in ration formulation. We've already seen how using grain, principally corn, for biofuel production reduced availability and increased the price of corn for feed and prompted greater use of byproduct feed ingredients. Speaking at the International Livestock Congress (ILC)-USA conference in 2012, Texas feedlot owner and cattle feeding consultant Hollis Klett said he would have never dreamed 30 years ago of using some ingredients now common to finishing rations.

"But we've reduced the amount of corn in rations by half — from 70% to about 35% — by using distillers' grains, corn gluten pellets, sweet bran and other byproducts," stated Klett, adding, "It probably saved our lives."

Klett told the ILC-USA audience that he anticipates even greater reliance on commodity byproducts, including more and different types. Fellow speaker and feed supplement manufacturer Joe Harris agreed. The Westway Feed Products executive noted the long history of using, as feed for livestock, the leftovers from human food processing or product manufacturing. Soybean meal, molasses, sugar beet pulp and cottonseed are byproducts that became common ingredients for manufacturing livestock feeds. On a regional or local level, cattle feeders have incorporated available byproducts such as citrus pulp, bakery waste, or waste from processing potatoes and other vegetables and fruits.

"It's not new — taking garbage and turning it into feed," said Harris. "I recently looked at a new potential feed ingredient that is a byproduct of manufacturing tissue paper."

Ruminant nutritionist Jim MacDonald thinks such innovations are likely to continue at a more rapid pace. A researcher at Texas AgriLife Research and Extension Center near Amarillo, MacDonald expects more numerous and diverse choices of feed ingredients. He thinks feeders will find it increasingly necessary to consider the alternatives. Feeders may have to change ingredients frequently, according to the availability

of different byproducts and as their relative values change. MacDonald says the major focus, thus far, has been on distillers' grains, the byproduct of ethanol production. He calls it the "No. 2" finishing ration ingredient, second only to corn. But its value could change.

"Originally, all components remaining after producing ethanol from corn, went back into distillers' grains. Nutrient levels in that byproduct are relatively high. But the value of the soluble portion is now recognized and can be marketed separately. Removing solubles removes nutrient value from distillers' grains," explains MacDonald. "Maybe the next thing is removing the fat and using it for another purpose, such as biodiesel production. That will remove energy and change the value of distillers' grains."

On the other hand, MacDonald notes how biodiesel production yields crude glycerin as a byproduct. As a potential substitute for a portion of the grain in cattle diets, glycerin's energy value compares favorably with corn on a dry matter basis.

"Personally, I'm not worried about running out of feed for cattle, as long as we don't run out of water. The potential for increasing crop yields is tremendous, as long as there's water for irrigation," states MacDonald. "I think we will have plenty of feed for finishing cattle, but we will use different feeds."

University of Nebraska ruminant nutritionist and feedlot specialist Galen Erickson says high feed costs are pushing innovators to feed less corn. Some would like to feed none, but Erickson calls that a mighty big challenge.

"We have collected data showing byproduct feeds can help minimize the amount of grain used in finishing rations. It suggests that a little grain can go a long way," says Erickson. "We need to find out what the minimum amount of grain is, but we also need to figure out the minimum amount of time that cattle need to be fed grain."

Increased efficiency

Erickson is certain that cattle feeders must continue to strive for greater efficiency. For some that might mean taking a new look at silage. A ration consisting of corn silage and 40-50% distillers' grains could have some real advantages.

"When you harvest corn and then harvest the dry stalks, you lose about 10% of the energy value that's available when the corn is cut for silage," explains Erickson. "There is some good stuff captured in silage — sugars with the energy value of corn — that isn't there in October. We need more data on this, but if I had access to an ample supply of distillers' grains, I'd have to think about silage."

An alternative energy source that could replace part of the corn in finishing diets of the future is alkaline-treated forage. With results similar to the decades-old practice of treating straw with ammonia, corn stover and other low-quality forages can be treated with calcium oxide (quicklime) and water to make the forage more digestible by rumen microbes. According to Erickson, recent research suggests treated forage can replace an additional 10-15% of corn in finishing diets, without sacrificing animal performance or carcass merit.

Erickson believes cattle feeding innovations will come out of necessity. He thinks simply grazing cattle longer prior to the finishing phase is not a visionary solution to the challenge of high grain prices.

More forage

"Graze them where?" asks Erickson. "Grain production is taking more acres away from forage, including pasture. Hopefully, we're going to build up the nation's cow herd. When we do, where will we graze (stocker) calves? Will we have enough pasture for the cows? We may need to look at ways to replace pasture for growing calves and maybe for cows too. I wonder if we'll be looking again, in some areas, at keeping cows in confinement and feeding low-quality forages plus byproducts — those we have and others that are coming."

Oklahoma State University Agricultural Economist Derrell Peel says it might sound like science fiction to some people — just too strange to be true — but he foresees a time when finishing rations may contain significantly more forage. Peel thinks cattle feeders may deliberately increase the forage component, knowing full well they are giving up some level of animal performance.

According to Peel, the cattle feeding industry has been focused on making cattle eat more grain with once cheap corn providing the incentive to push for ever increasing animal performance, including rate of gain and feed conversion. Feeders learned how to do a pretty good job of finishing a steer on a high-concentrate diet. They've successfully pushed the limits for feeding grain to a ruminant animal. Now, says Peel, the incentives have changed. The cost of grain is significantly higher, and he expects it to remain high, on average. Peel thinks economics could force cattle feeders to find ways to feed much less grain and still produce a high quality beef carcass.

"The first step has been to substitute other feed ingredients for corn. That may be just a short-term response. We might be able to take it only so far. It's still tied to the corn market and there's probably a limit to the amount of (feed

cost) relief we can get," explains Peel. "Economics may push us to reconsider the ruminant's comparative advantage — its ability to utilize forage."

It may be time, suggests Peel, to consider how cattle can be finished using an optimum rather than maximum amount of grain. He wonders if finishing rations of the not-so-distant future might contain more byproducts but also more forages with cattle receiving grain later in the production process. Peel wonders if, in Oklahoma, for example, cattle might be taken from 850 to 1,050 lb. (or more) on wheat pasture, followed by a short period on a high-grain diet. Of course, cattle feeders might also have to set their sights on optimum levels of animal performance — not maximum.

"There's potential, if feed grain prices remain high enough, long enough, for the whole production system to change," says Peel. "Cattle might not be pushed onto a hot ration so fast. They might be on a high-grain diet for just 60 or 70 days, instead of up to 180 days. How they are managed prior to placement in the feedlot could change. It would have to change the way cattle are backgrounded and it might have an impact all the way back to the cow-calf segment."

Peel suspects a production system that is more forage intensive, overall, would require different thinking with regard to genetics. However, that might quell some long-standing differences between the cow-calf producers and cattle feeders.

"For a long time, there have been some antagonisms related to feedlot incentives and cow-calf incentives. Selection for genetic traits important to feeding cattle grain, in the feedlot, is sometimes antagonistic to traits important to the cow-calf producer relying primarily on forage," notes Peel. "Decreasing those antagonisms might make it easier to focus on genetics that work well in every phase of production."

Peel thinks it might be time to remember that forages once played a much bigger role in cattle finishing diets. During the 1950s and '60s, feed grains were still valued relative to forage. Over time the industry pushed grain-intensive production much further than many cattle feeders of that era could have expected. However, the industry might be headed back toward the place from where it came.

"I'm not sure we have any idea how far we could push a forage-intensive system," says Peel. "The economic environment for cattle feeding might lead us to find out." **HW**