

The Triple 20

Whole cottonseed can be a good option when feeding beef cattle.

by Heather Smith Thomas

Whole cottonseed has been fed to cattle for a long time, but in recent years there has been renewed interest in this highly nutritious byproduct of the cotton industry.

That's for good reason, says Terry Quam, who with his wife and family co-owns Marda Angus Farms in south-central Wisconsin, 20 miles north of Madison. The operation consists of about 275 purebred Angus cows, 1,000 acres of crop ground and another 1,000 acres of pasture and hay.

"We are in the heart of good, expensive crop ground and grow corn, soybeans, oats, wheat, barley — whatever the year and the economics dictate and whatever our cattle need," Quam says.

Still, cattle are the main source of income.

"We sell about 60 bulls and 50 females each year through three sales,"

says the 68-year-old. "I work a lot with our customers, and one of the things here in the North that I try to do is challenge producers to look at everything their cattle need."

The traditional beef producer usually just wants to put out a big bale of hay (or several) and not have to look at the cattle for a week, he says. "I tell them that 'least cost' or 'least labor' is not the only answer to being a beef producer. You need to look at the whole picture."

The cattle may need a supplement to create a balanced diet for optimum health and production, he says.

Options not equal

Wisconsin has many byproducts, and some make good supplements to augment mature, dry pastures or poor-quality hay.

"We've been in severe drought and will be looking into a different kind of feed ration this winter," says Quam. Many cattlemen, he says, will be using cornstalks, whether baled dry or at high moisture and wrapped. Some will use more straw because they don't have the hay or the ability to put up a silage crop.

"Just because a feed is cheap doesn't mean it will provide what you need for your cows," Quam cautions. "You've got to look at the nutritional needs of the animals — whether cows, feeder animals or calves — at the times they need it."

He uses whole cottonseed and cottonseed hulls in young cattle diets to provide fiber and in pregnant females to meet prenatal needs.

"I am a big believer in prenatal care and having adequate nutrition for the pregnant cow, especially 90 days ahead of when she will calve," he says. Nutrient requirements increase exponentially during that third trimester when the fetus is growing rapidly.



"We need to build that cow's ability to put the necessary nutrients into that calf, so when it hits the ground it will be healthy and strong," says Quam, who calves in January-February, the coldest part of winter. Calves must be vigorous to get up and get going in those conditions.

Triple-20 profile

According to University of Georgia Extension Bulletin 1311, cotton byproducts offer a variety of ingredients that can lower the cost of beef cattle production. Cottonseed meal and whole cottonseed can be used in rations for any class of cattle as a protein and energy source.

Blake Wilson, associate professor at Oklahoma State University, has conducted several research projects recently with whole cottonseed for feedlot cattle and cow-calf operations.

"The old-school terminology to describe whole cottonseed was that it was a 'triple-20 feed,' meaning it was approximately 20% fat, 20% protein and 20% fiber, and all of these are important for a beef cow or feedlot



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animal,” Wilson says. “Cottonseed is very high in those three characteristics; no other feed has that same nutritional profile.”

When feeding a total mixed ration (TMR) in a feedlot, whole cottonseed can be included at about 15%-20% of that mix.

“It can replace the protein, fat and fiber from other ingredients in the ration, with no detriment to performance or, in some cases, improved performance compared to the other ingredients it is replacing,” says Wilson.

Double punch

Buck Chastain, a nutritionist with clients around the world (BC Consulting), says TMR diets need to be at least 60% or better dry matter, and cottonseed can help do that.

“Cottonseed is an excellent protein source — both crude protein and a high-bypass protein — so it’s not just one explosion in the rumen, but longer-lasting,” says Chastain.

Having amino acids in the lower gut helps with digestibility, explains Chastain, who says he has balanced diets on amino acid profiles for more than 25 years.

“A steak has a 3-to-1 lysine-to-methionine ratio. Milk also has this 3-to-1 ratio. Cottonseed has a 6-to-1 lysine-to-methionine ratio,” he says. Energy sources

like corn and oats, on the other hand, are very high in methionine and deficient in lysine.

“With corn diets you need to add synthetic lysine or feedstuffs with a high lysine-to-methionine ratio to balance the diet,” Chastain says. “With cottonseed being 6-to-1, this works out very nicely to balance a diet.”

Both whole cottonseed and cottonseed meal are good sources of phosphorus. Whole cottonseed is an excellent supplement to poor-quality grass hay for dry and lactating cows, because it supplies both energy and protein in a single feed ingredient.

Feedstuff that fits

“Sometimes it costs a few more cents per cow per day to add something like whole cottonseed into their diet to increase the fat content, energy and protein they need,” says Quam. “If you are using straw or cornstalks as winter feed, you definitely need to increase the nutrient value of that diet.”

With access to ethanol plants, Quam says they feed a lot of distillers’ grains in his area.

“We use it, and blend it into the ration, but you have to limit the amount because of certain problems with that feed,” he

cautions. “The best ration is often a blend.”

Quam encourages his bull customers not to be loners.

“Talk to your feed sources, and don’t be afraid to cozy up to your big dairy neighbor,” he advises. “They may be getting cottonseed by the semi load.”

A neighboring dairy may be your best and closest source, he observes.

“Don’t be afraid to talk. Nutrition is crucial. Even preparing calves for weaning, you need the proper diet, especially on a year like this where pastures were poor all year,” says Quam. “There was nothing much out there for calves to eat. If you thought they would gain weight on dry pasture and milk, the people who buy those calves will be disappointed. If you want repeat customers, you need to give them a product that’s ready to go when they hit the feedlot.”

Whole cottonseed can be an excellent supplement on dry pastures — for lactating cows and their calves. It can be fed in bunks or on the ground, depending on weather conditions.

“We do it both ways,” says Quam. “This year I have two groups of cows. Our fall-calving herd never sees a building during winter. They winter in a wooded area and a 50-acre corn field. When they are in

Continued on page 38

the woods they have shelter, no matter which way the wind blows. Once the ground freezes, we feed whole cottonseed on the ground, and they can clean it up. It doesn't get lost in the mud.

"Cows that calve in January-February are fed in bunks," he explains. "I put up a new facility that holds about 90 cows and calves under roof in complete confinement, fed in bunks."

The fall cows, however, generally graze pasture or cornstalks with hay all winter.

"I normally just string out a little supplement in a long line for all of them to eat. This year, however, I don't have enough hay," he says, adding that he hoped to get some cornstalks harvested wet to use as a free-choice fiber source, then provide protein, energy and other needs via a TMR fed on the ground.

Cottonseed will be part of this blend, he says.

Finding a source

It's not hard to find a good source for



Cotton growing in field

whole cottonseed in his part of Wisconsin.

"I can get some within 10 miles any direction, depending on which dealer I buy from. All our feedmills handle it; they all supply feed to dairies. But some of the best deals, especially if you don't need a huge amount, might be to get it from a dairy neighbor."

In the northern states, most of the cottonseed will be coming from Kansas or Missouri.

"To me, the bottom line in looking at supplements is to figure out what your cattle need. You've got to look at availability and price, but you also have to look at what might be the best product to put into those cows, and what will give the best product to the people who buy cattle from you," Quam says. "In the end, we are selling them to somebody, whether it's a fed steer, feeder steer, a bull or female. If you want to stay in

business, you need to offer them cattle that make them money and look good."

What about fertility?

Some people worry about feeding cottonseed to bulls because it might negatively affect fertility.

Lawton Stewart in Georgia has been doing research on the optimal amount of cottonseed that can be fed to breeding cattle (cows and bulls) without affecting fertility. The rule of thumb is to feed about 0.5% of body weight.

This is easy to figure when formulating rations. If you have a 1,000-pound (lb.) animal, you could feed 5 lb. of cottonseed per day. In the study in Georgia, on bulls, the research trial did not extend beyond 60 days. But for that length of time, cottonseed had no negative effect on fertility.

"I have never had any fertility problems in any bulls by having cottonseed products in creep feed when they are calves or in the growing rations they eat until they leave here to be custom-fed," Stewart says. They go either to the Midland Bull Test in Montana or are custom-fed by a big feeder in southern Wisconsin.

"Fiber is the big thing we are looking for, to put into that growing ration," he explains. The benefits of whole cottonseed are many, supplying energy via the oil (fat), fiber and protein. Cows have better milk production, and calves are healthier.

Quam says the biggest problem in northern regions experiencing drought is having no fiber products. Hay is hard to find.

"I can get protein anywhere; I get soybean products, distillers' grains, etc.; but can't find much of anything containing adequate fiber," he says.

Whole cottonseed is now easier to find in his area than oats (a high-fiber grain, with the hulls), and also provides more nutrients than many other feed ingredients.

"The first step for incorporating whole cottonseed into beef cattle diets is speaking with your nutritionist and formulating a ration that meets your animal production expectations and does not exceed feed budgets." **ABB**

Editor's note: Heather Smith Thomas is a freelance writer and cattlemaster from Salmon, Idaho.