

Nutrition for the Cow Herd:

Supplementing Protein

Know when and how to supplement protein to help your cow herd perform.

by Heather Smith Thomas, freelancer

Protein requirements for pregnant cows increase during later stages of gestation and are highest for young cows. If you keep the young cows (those that will be first- and second-calvers) separate from the main herd, they can be supplemented with protein, if necessary, without having to supplement the whole herd. They could also be fed a higher level of protein more easily. Mature cows can be brought through winter and early spring a lot more easily than the younger cows, because they are not trying to grow.

Nutrient requirements in early gestation are not much different from maintenance requirements, but as the fetus grows larger, the cow's nutrient needs increase. If a cow is lactating, she needs a much higher level of protein and energy than when she is pregnant.

Shannon Williams, Lemhi County Extension agent in Salmon, Idaho, encourages cattle producers to remember that during the 60 days following calving they are asking the cow to produce milk, repair her uterus and breed back again.

"This requires the maximum amount of energy and nutrients," Williams says.

If a cow is in poor body condition when she calves, she doesn't have a very good chance to prepare for rebreeding while she's producing milk for her new calf. She may continue to lose weight even if you increase her nutrient levels, and she may fail to cycle on time. This is a crucial phase in her production cycle, and if she is a young cow that is still growing, her needs for energy and protein are even greater than that of an older cow.

"Because of these factors, producers should feed 2- and 3-year-olds differently from the way they feed the main herd," says Williams. "You also need to pay attention to body condition score (BCS, see www.cowbcs.info), especially in these young cows. If an older cow is losing weight, she should also be pulled out of the herd and fed differently. Some producers put their old, thin cows with the young cows — whatever works for their own operation."

She explains, "A mature 1,100-pound cow needs 7.8% of her diet to be crude protein during the last trimester of pregnancy. A 900-pound coming 2-year-old approaching her first calving in her last trimester would need 9% crude protein in her diet. Another thing that is different between the heifer and the mature cow is the net energy for maintenance (NE_m). The percent TDN (total digestible nutrients) [requirement] for a 900-pound heifer is 65.4%, as compared with 53.2% for an 1,100-pound cow during her last trimester. This is a major difference."

Protein levels of forage

Whether to supplement with protein will depend on protein levels of the winter forage and the needs of the cows. David Bohnert, beef extension specialist and ruminant nutritionist with Oregon State University's Eastern Oregon Agricultural Research Center at Burns, Ore., says that the forage might not have enough protein, but if we can keep the herd grazing longer during winter, especially with forage prices as high as they have been in many areas of the West, "that's where economics of supplementation go even beyond the cost of the supplement and maybe even cow performance." This may make a bigger difference on whether the ranch breaks even, falls short or makes a profit.

You need to look at expected performance and what you want that cow to be able to do (give birth to a healthy calf, be able to feed it and breed back in a timely manner). If the cow can do that on what we are feeding her, our goals have been met, even if she might not have had the exact amount of protein she needed.

"We look at our resources and come up with a plan so we can effectively and economically get to where we want those cows to be — not necessarily locked into where we think they have to be. It depends on your objective and the cow herd you have, and how they have been managed in the past. Some cattle are more efficient than others," Bohnert explains.

The newest nutrition research is in gestational nutrition and fetal programming.

"Some of that is valid and worth considering, but there is also some work from our research lab and other studies that show

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cows can go through a period of time when they don't get adequate nutrition and lose body condition. If we can bring them back up to an acceptable body score — on a positive plane of nutrition — heading into calving season and breeding season, we are not hurting them. Over the long term, we are not hurting the cow or the calf," he says.

"There are studies that show weaning weights will be increased by supplementing cows during late gestation, and data from Nebraska that show there might be some long-term reproductive benefit to the heifer calves that were in those supplemented cows," says Bohnert.

"But when we are raising cattle, we are raising them to eat. Many gestational studies have been done as a model for human nutrition. For example, we know that gestational nutrition in humans can have long-term effects on the offspring, especially with problems like diabetes and heart disease." For an animal that will be slaughtered by the time it is 2 years old, however, those things may not matter so much.

"When we look at this from a food-animal production standpoint, we need to take advantage of the cow's ability to ride through some tough times. Nature has programmed her to do this, and she does it pretty well, with just a little bit of help," he says.

"We have to be flexible, especially when looking at feed prices and what cattle are bringing. We don't want to sacrifice performance, lose calves or have open cows. So we try to find supplementation strategies with protein and energy that save producers money while maintaining acceptable performance," Bohnert adds.

"For example, a lot of people shy away from urea. Over the years it has gotten a bad rap. If used properly, however, it can be very beneficial. Research here, and at other land-grant universities, has shown that with low-quality forages, urea can be a good source of supplemental protein for cattle in an extensive environment. This can be one way to decrease costs of supplementation," he says.

"As with most things, the key is to manage it appropriately. You don't want to feed too much because it can be toxic to cattle if they consume excessive amounts, creating urea toxicity. If used properly, in the right supplement (whether liquid or block form, or even feeding it by hand in a grain mix), it's another way to increase protein intake while decreasing costs — taking advantage of the cow's ability to recycle nitrogen," explains Bohnert.

Ranchers just need to figure out what works best for their own situation — their ranch, environment, forage resources and economics, says Bohnert. "What might work for me might not work at all for you, or the

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guy down the road, and vice versa. There are huge differences in management systems and infrastructure. Some people have troughs and can feed a supplement out on the ground, and others can't."

Try to look at all the options and innovations/possibilities.

Supplementation in hard times


In extreme situations, when drought or some other factor has reduced forage supply or quality, we need to think about protein levels — and a supplement — so the fetus is not compromised and the cow is not pulled down in body condition to where she won't lactate very well or breed back.

"If we manage it right, one year of drought can be easy to handle, but it becomes more difficult when you get into several years of below-average precipitation, like we have experienced here in southeastern Oregon the past three years," Bohnert says. "We had to look hard at how we were going to feed cattle. With limited hay production and depleted hay reserves, we looked at the cheapest sources of energy and protein. Last year the price of corn came down enough that buying

corn was more attractive than buying hay."

Typically, a cow-calf producer would only use corn as a supplement, but in certain circumstances you can rely on it more heavily.

"We were using about a 50% corn-based diet for our cattle. We traditionally put up more than 1,000 tons of hay here, but two summers ago we put up less than 250 tons and had to find a way to stretch that forage," he says. "We bought some forage and a lot of corn and distillers' grains to get through that winter. When we looked at grass straw or other cheap forages, the freight costs to get it here made it more expensive than corn as an energy source."

He continues, "Cattle don't have to consume a 100% hay diet; their main requirements are for energy and protein. What we need to look at is the cheapest way we can get those nutrients into them. It's usually forage, but sometimes it isn't. When alfalfa hay gets above \$200 a ton, and grass hay or even grass-seed straw starts costing \$170 to \$180 per ton and is only 50% TDN — and [with] corn costing less than \$300 per ton — it becomes clear that alternative management decisions must be considered." 

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