

Cow-Calf in Confinement

Nutritionist suggests confinement could benefit animals and operators.

Story & photos by **Troy Smith**, field editor

Though known best as a feedlot nutritionist and beef industry writer, Kenneth Eng is a cattleman, too. He is currently focused on timber and cattle operations in Mississippi, but Eng has owned ranches in his native Nebraska, California, Texas, Oklahoma and New Mexico. In addition to the fairly traditional grass-based yearling and cow-calf enterprises he has owned, Eng has maintained beef cow herds in what he calls modified- or semi-confinement.

Eng certainly isn't the only cattleman to do so. Plenty of producers keep cows confined to a relatively small area and feed them for some portion of the year. As a consequence of drought, a good many cows spent time in drylot last spring, while pastures were given extra growing time prior to grazing. Some producers confine part or all of their cows for most of every winter — whenever the herd is not grazing summer pasture. The cows are held in a drylot setting — whether that consists of a sacrifice pasture, winter trap or feedlot — where they receive harvested feedstuffs.

Eng believes the beef industry could



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benefit from more semi-confinement cow-calf operations. He is not suggesting that everyone ought to do it. Neither is he recommending yearlong confinement and feeding of cows. Such an operation probably won't be competitive long-term. However,

Eng says the semi-confinement model could aid the rebuilding of the nation's beef cow herd. It might be a way for established producers to expand, and an avenue for new cow-calf producers to enter the business. However, Eng says the greatest opportunity may result from turning the existing semi-confinement model on its head.

Using cornstalks

"I foresee the emergence of semi-confinement cow-calf operations that utilize little or no grass," says Eng, noting the increasing scarcity of grassland in many parts of the country. "More and more grass has been converted to crops. Pastureland values and rental rates keep climbing, but crop residues offer a tremendous alternative grazing resource."

In honor of his late wife, Eng created the Kenneth and Caroline McDonald Eng Foundation to fund research and education in cow-calf production efficiency. According to Eng, a collective \$2 million is being invested in beef cow research, including drylot production systems, by the University of Nebraska, Oklahoma State University and Texas A&M University.



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Terry Klopfenstein, University of Nebraska (NU) ruminant nutritionist and professor emeritus, agrees the abundance of crop residues represents a great and underutilized opportunity for grazing cows. Klopfenstein

CONTINUED ON PAGE 190

Points to ponder for drylotting cows

In a perfect world, all cows would be grazing in pastures at all times. You'll hear no argument from Vernon Anderson, but the North Dakota State University (NDSU) animal scientist knows it doesn't always work that way in the real world. Because of the scarcity of pasture in some areas, some farmers and ranchers may consider modified drylot cow-calf systems as a means of expanding their herds. Drylotting cows for at least part of the year also may be a way for young and beginning producers to start a cow-calf enterprise on limited acreage.

Anderson says studies at NDSU's Carrington Research Extension Center show drylot cow-calf production can be a viable alternative to more traditional pasture-based systems. However, careful herd management and integration with crop production is needed for drylot systems to be competitive from the standpoint of economics and biological performance. To producers pondering the potential of drylot systems, Anderson urges consideration of the following points:

- Cows still need space. During periods of confinement, allow 300-500 square feet per cow (or more) depending on topography and other factors.
- Assuming that expensive feeding equipment is necessary can severely reduce profit potential. Investment in tractors, feeder wagons and storage bins must be paid for by pounds of beef sold.
- Sourcing relatively low-cost feedstuffs, such as byproducts of crop production, generally is a key factor in drylot systems. Low-quality forages work well in total mixed rations. Ultimately, though, confined cows must have a nutrient-dense ration. Cows perform as a result of what is placed in the bunk.
- Weaning calves early, at as few as 100 days, but not more than 150-160 days of age, reduces cow nutrient requirements. Cow diets can be adjusted accordingly, reducing ration cost. Of course, young calves need a highly nutrient-dense diet at weaning. Low-stress fenceline weaning often is easy to apply in a drylot situation.
- Pens have to be cleaned, and that represents a cost. However, manure has value as nitrogen, phosphorus and potassium fertilizer. Anderson values manure from drylot cows at \$60 per head.

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CONTINUED FROM PAGE 189

says producers might want to think about grazing cows on cornstalks and other crop residues during the winter, then drylotting cows in the summer. He says summer calving might be a good choice for many producers. The economics of that scenario, where cows are confined for six months and graze residues for six months, can be favorable in areas where the feed resources are available.

"Ethanol has changed our lives," states Klopfenstein, referring to the conversion of grassland to corn production, as well as the growing use of distillers' grains and other corn-milling byproducts by cattle feeders and cow-calf producers. Many fields of cornstalks are windrowed, baled and transported for use in cattle rations. However, cornstalks may be most valuable when left in the field.

"Grazing absolutely is the most efficient way to use cornstalks," emphasizes Klopfenstein. "Stalk grazing is very economical. It makes the hypothetical confinement/stalk-grazing system economically competitive."

To grain farmers worried about potential soil compaction resulting from cattle grazing crop fields, Klopfenstein says it is not a problem. Based on 15 years of Nebraska research on fields planted to corn and soybeans, in rotation, researchers determined

that grazing cornstalks does not cause detrimental soil compaction. Subsequent soybean yields actually increased following cornstalk grazing, and grazing cows still left sufficient residue behind to enhance no-till farming methods.

"Grazing does not harm fields. Leaving fields ungrazed means fields have way more residue than is needed. It doesn't make sense to waste it," Klopfenstein states.

NU Cow-Calf and Range Specialist Karla Jenkins says those baled cornstalks and other



► "Limit-feeding cows in confinement is key. Letting cows eat all they want is not economical," says Karla Jenkins, NU cow-calf and range specialist, explaining that total dry-matter intake should be limited to less than 2% of body weight.

residues, wheat straw, and low-quality hays tend to be the most cost-effective ingredients for rations fed to cows while in confinement. The quality of the total ration can often be boosted economically with the addition of byproduct feed ingredients such as distillers' grains and corn gluten feed. Depending on an operation's location, alternatives might include sugar-beet pulp, wheat midds, soy hulls and other byproducts.

"Limit-feeding cows in confinement is key. Letting cows eat all they want is not economical," says Jenkins, explaining that total dry-matter intake should be limited to less than 2% of body weight.

"A limit-fed ration must contain energy-dense ingredients," she adds. "Producers must know the nutrient content of their feedstuffs, and they must know the nutrient requirements of their cows. That changes with stage of production. The diet must be manipulated, by adjusting ingredients or the amount of ration fed, in order to meet changing needs of the cow and calf. It really doesn't matter which commodities are used in a ration, as long as it provides a palatable and balanced diet. Producers can and do get pretty creative."

Accounting for calves

When calves are present with cows in confinement, producers need to consider the

Stewardship key to drylot cow-calf systems

Managing cattle health and well-being is always a matter of stewardship. However, a producer may face heightened challenges when a cow-calf enterprise involves periods of drylot confinement. According to Gerald Stokka, North Dakota State University (NDSU) veterinarian and associate professor of livestock stewardship, particular care is warranted during late gestation, as well as during and after the calving season.

While the environment is definitely different than pasture-based systems, Stokka says producers actually can have more control over it. They can provide windbreaks and bedding, and some may allow cattle access to an area covered by a roof. Allowing adequate space in pens and keeping pens clean is required.

"Of course, it does require animals to be closer together. That can increase opportunity for transfer of disease pathogens, and it can increase stress," he adds. "Producers have to bear that in mind and be prepared to address those issues."

To minimize stress, Stokka warns against mixing different groups or pens of cattle together. If it is absolutely necessary, he recommends commingling groups prior to late-gestation. The reason is that cattle nearly always undergo some stress while acclimating socially and establishing a pecking order. When pregnant cows are fed in bunks, they are apt to jostle one another around. Any stress a cow endures is shared by her unborn calf, especially during the last trimester, and a boss cow's butt to the belly could jeopardize a subordinate's pregnancy. It is absolutely necessary to provide adequate bunk space.

Stokka is not a fan of limit-feeding during late gestation or when cows have new or very young calves. While limit-fed cows may be receiving a ration that meets their nutrient requirements, they typically aren't eating enough volume of feed to feel full. Even with plenty of room at the bunk, dominant cows may aggressively and

sometimes violently compete for more than their fair share of feed. After giving birth, some limit-fed cows may leave their new or very young calves in a rush to the bunk at feeding times.

"These things can often be managed by feeding more than once per day and adjusting the times that feed is delivered," states Stokka.

It has been noted that, to help control scours, the Sandhills Calving System can be adapted to calving in confinement. Stokka reminds producers that this can be complicated if cows are already divided into multiple groups. For example, the herd might be sorted according to nutritional need, penning heifers, 3-year-olds, productive-age cows and old cows separately. Applying the Sandhills Calving System requires a series of pens for each separate group, so that heavies can be moved periodically to clean pens.

On the other hand, close monitoring, detection and response to dystocia or scours and other disease challenges can be handled with relative ease when cattle are held in close quarters. Good stewards, says Stokka, have to be prepared for these challenges.

The choice of calving season is an important consideration, in Stokka's opinion. The choice of spring or summer will likely depend on the individual operation. Weather patterns, facilities, marketing goals and other demands on labor are factors to consider.

"I could make a case for calving in the fall and weaning in January, too. And it may be that some producers have enough pasture available to have cows on grass during calving, with pairs going into drylot later," suggests Stokka.

"There are many possibilities for modified confinement systems. Certainly they can be viable alternatives, scientifically and from the standpoint of animal welfare. To be successful, though, good stewardship is important."

amount of feed they will consume. According to Jenkins, calves often start sampling the forage very early. By three months of age, a calf will eat about 1% of its body weight in forage, in addition to nursing the cow. So when feeding pairs in bunks, amounts fed should reflect consumption by calves, as well as cows.

Jenkins advises producers feeding cows in confinement to target cow body condition score (BCS) 5. Her Nebraska colleague, Extension Beef Specialist Rick Rasby, agrees.

“Body condition score is a good indicator of adequate nutrition, and cows in BCS 5 do just fine from a reproductive standpoint. Cows in BCS 5 at calving can maintain a 365-day calving interval,” states Rasby, warning of the danger associated with cows exhibiting poor body condition at calving.

“Trying to play catch-up after cows calve usually doesn’t work. You can increase their energy intake, but the added energy usually goes into lactation and not on the cow’s back,” explains Rasby. “It’s better to be proactive and make sure cows have adequate condition at calving.”



► NU extension beef specialist Rick Rasby says confinement may also accommodate application of synchronized artificial insemination (AI) more easily than pasture-based systems.

Allowing adequate bunk space is important when feeding cows in confinement. It’s particularly important when cows have calves at side. Rasby recommends allowing three feet of bunk space for each pair. He also advises consideration of an ionophore, for inclusion in the ration, calling it beneficial to reproduction and feed efficiency.

According to Rasby, confinement of cows may afford advantages for application of various management practices. Cattle are close at hand for routine vaccinations, as well as preconditioning and weaning of calves. Rasby says early weaning is a practice that can help producers manage cow body condition. Moved to their own pen, calves can be fed a growing ration and the cow diet can be adjusted for the period of non-lactation.



► Not all “drylot” environments equate to the stereotypical feedlot setting, says MSU veterinarian David Smith.

Rasby says confinement may also accommodate application of synchronized artificial insemination (AI) more easily than pasture-based systems. When using natural service, fewer bulls may be necessary to cover cows in confinement. Rasby warns against skimping on bull power when using yearling bulls. However, mature bulls might be used at the ratio of 1 to 30 or 35 cows, instead of the typical pasture breeding ratio of 1 to 25.

Mississippi State University (MSU) veterinarian David Smith says the common assumption is that calf sickness will be a significant problem if calves are born and raised in a confinement setting. However, not all “drylot” environments equate to the stereotypical feedlot setting. Cows might be maintained on center-pivot corners or any designated parcel of crop ground or pastureland. It might be a few acres or 40 or more. Generally, more room is better during calving and while calves are very young.

“Crowded conditions of confinement systems increase the opportunities for injury from others in the herd and from hazards presented by broken posts, fences and gates, and the drylot environment can enhance transmission of infectious disease,” says Smith.

Managing risks

The risks, he adds, can be addressed. Risks of physical injury to cow or calf can be minimized by designing facilities that present minimal hazards and keeping them maintained. Choice of breeding season should allow for calving and subsequent production stages to occur during optimal weather conditions. Producers also must implement appropriate practices for managing animal health, including careful monitoring for injury and disease.

Smith cites University of Nebraska studies where the Sandhills Calving System was applied to cows managed in confinement.

After calving began, cows that had not calved yet were separated from those that had delivered and moved to a different, clean pen. Moving of heavies occurred weekly to prevent the buildup of pathogens in the calving environment and to reduce opportunity for overwhelming exposure of new calves to pathogens.

“In (confined calving) trials, there were no calf losses due to scour when the Sandhills System was applied,” states Smith, admitting the study was small. “Health risks can be mitigated, though not eliminated, by anticipating their occurrence and managing known risk factors.”

According to North Dakota State University (NDSU) animal scientist Vernon Anderson, disease has been essentially a nonissue for cows undergoing a summer drylot period at Carrington Research Extension Center. The Center has maintained cows in a semi-confinement system for more than 40 years.



► Disease has been essentially a nonissue for cows undergoing a summer drylot period at Carrington Research Extension Center, says NDSU animal scientist Vernon Anderson. The center has maintained cows in a semi-confinement system for more than 40 years.

“Watching the cattle closely every day in the drylot gives you an advantage over pasture in early detection of signs of disease. Treatment can be affected easily and quickly. Treating individual animals early reduces the potential of serious outbreaks,” says Anderson.

In Anderson’s opinion, the well-managed drylot can be “cow heaven.” Poorly managed operations could be just the opposite. Anderson says the onus is on the manager to provide adequate facilities, proper nutrition and care. Anything less is not in the best interest of the cattle or the economics of the enterprise.



Editor’s Note: Troy Smith is a freelance writer and a cattleman from Sargent, Neb.