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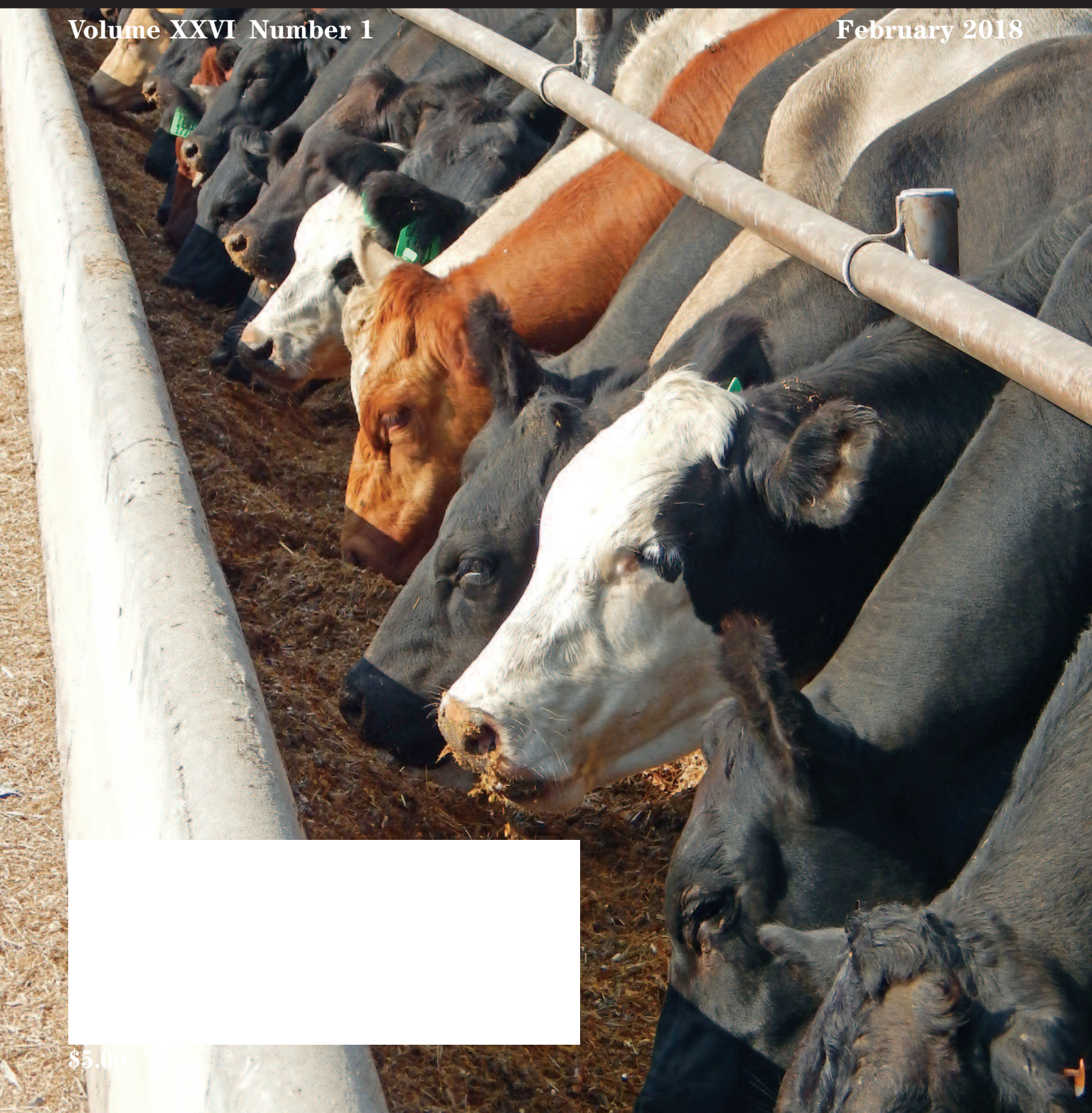
FEEDER INFORMATION HIGHLIGHTS

Volume XXVI Number 1 February 2018



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FEEDLOT

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February 2018


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FEATURES

FEEDLOT FOCUS

STOCKER SPECIAL

Cover photo by Amy Spillman

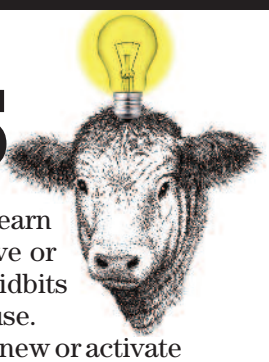
COW CALF CORNER

MANAGEMENT

Editor's Note: *In the November 2017 issue, the article "When Antibiotics Fail" did not mention the products* ***Norfenicol*** *and* ***Enroflox 100.*** *We regret the unintentional omission.*

BY **JILL J. DUNKEL**

NEW IDEAS



There's something to be said for doing things "like it's always been done." More than likely, our predecessors tried various methods and decided this was the best course of action for one reason or another. But sometimes, a new approach is not a bad thing.

One article in this issue looks at vaccinating high risk calves on arrival, versus a 14-day delayed vaccination protocol. A University of Nebraska veterinary epidemiologist led a webinar last fall discussing research that showed little difference in morbidity with on arrival and delayed vaccination strategies. The research might prompt you to analyze your current processing strategy with high risk calves and see if you should stick with "how it's always been done," or consider a new strategy.

FEED•LOT magazine is also trying something new – offering free subscriptions to smaller, qualified operators. In the past, cow/calf and feedlot operations over 500 head qualified to receive our publication free of charge. However, we know there are a large number of full time operators that fall below the 500-head threshold. With that in mind, we have lowered our qualification number to reach smaller operations. But our goal remains the same – to offer information that career cattlemen learn from, ideas that save or make money, and tidbits that can be put to use.

For those who renew or activate a new subscription to *FEED•LOT* from now until May 1, 2018, your name will be put in a drawing for a $600 gift certificate to Cuchara Cabins and Condos in Cuchara, Colorado. Visit www.feedlotmagazine.com/subscription to throw your name in the hat and complete your subscription.

Another "idea" to keep your eye on is on the Electronic Logging Mandate (ELD) as it relates to the agriculture industry. This is one idea that is not a good thing for the industry. NCBA's government liaisons say Congress is listening, but as of press time the industry is operating under a short-term waiver.

In closing, if you have bulls in a cold climate, be sure to read the article on scrotal frostbite. Author Heather Smith Thomas discusses the danger of frostbite and ways to avoid the problem. In her research, she came across a story about a lady who was not afraid to try a new approach to the problem. It's a story that's too good not to share…

Some years ago a lady in Saskatchewan had bulls that suffered frostbite and felt sorry for them. Thinking to prevent future problems, she knitted little scrotum warmers and called them oyster ovens. She thought this was a spectacular idea to keep bulls from getting frostbite! She envisioned that knitting oyster ovens would be a successful home business, until someone pointed out that covering the testes could warm them too much, which could result in what you are trying to prevent—a decrease in semen quality. FL

Here's to considering new ideas!

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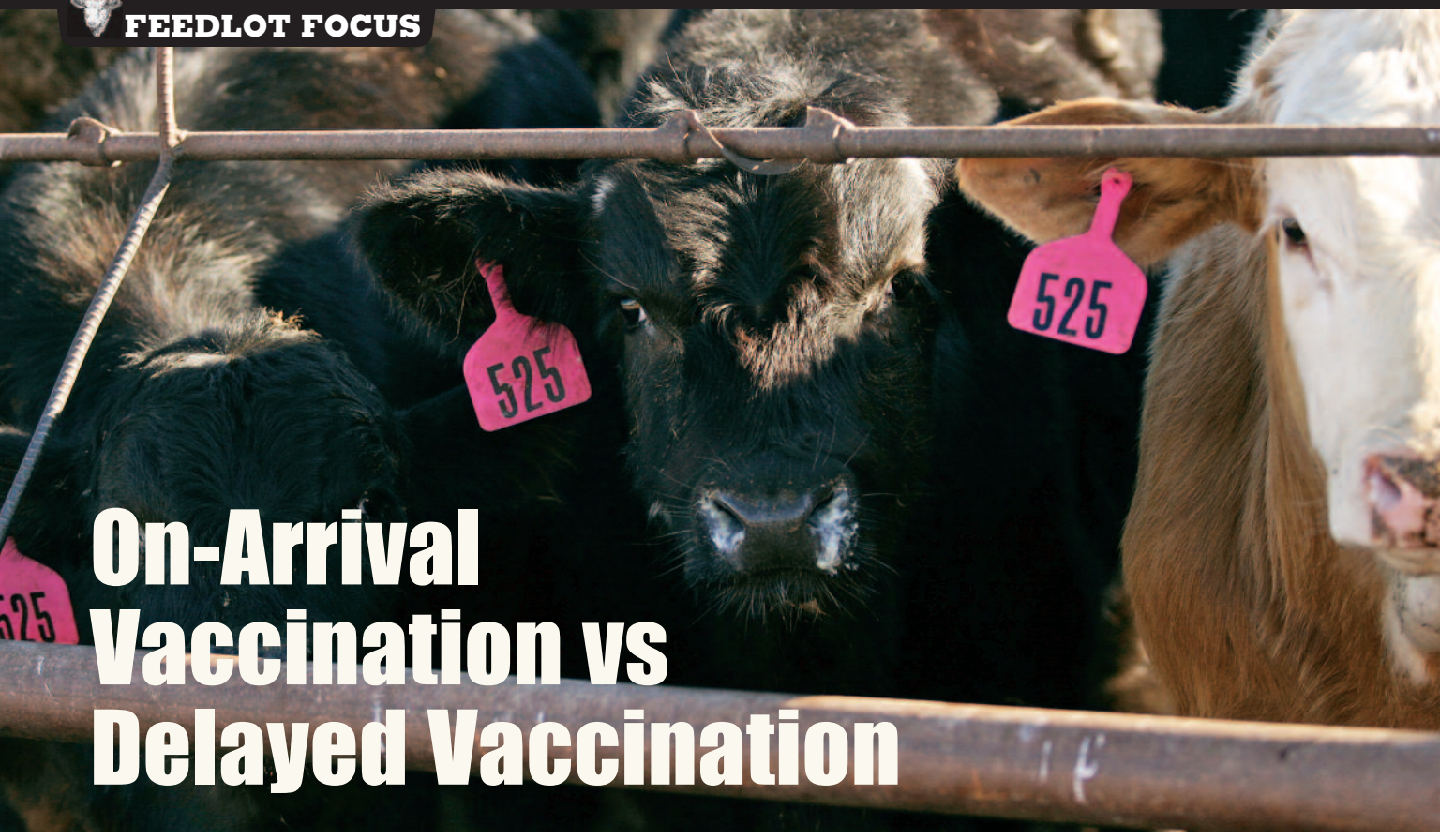

On-Arrival Vaccination vs Delayed Vaccination

In high risk calves, research shows delayed vaccination strategies could trigger an improved immune response with no increase in morbidity

BY **JILL J. DUNKEL**

It's common practice to vaccinate newly arrived cattle coming in to a feedlot or backgrounding operation. These calves – especially if they are of a mixed or sale barn origin – are at high risk of infection after stressful events such as weaning, transport or going through a sale barn. It makes sense to get a vaccination program started immediately in an attempt to head off illness.

Or does it?

Brian Vander Ley, DVM, PhD, DACVPM, is a veterinary epidemiologist at the Great Plains Veterinary Educational Center, University of Nebraska. He said research shows it might be time to reconsider this standard practice.

"It's interesting if you read labels, the general directions on most vaccine bottles say 'vaccination of healthy cattle recommended.' A lot of times we don't take the time to read the small print on a vaccine label. Almost every vaccine we can put in cattle carry a statement like this," Vander Ley said.

In other areas of medicine, particularly human and small animal, practitioners go to lengths to make sure vaccine recipients are healthy before giving a vaccine. "We don't do that for cattle because we vaccinate or process cattle in mass. The question is, are they really healthy enough to receive it?" he asked. "Stress in transport, comingling, weaning, exposure to pathogens, physiological stress… do these cattle fit the definition of healthy animals?"

Don't misunderstand – cattle absolutely need to be vaccinated. A sound vaccination protocol at the ranch is preferred when stress is at a minimum and cattle experience limited exposure. When vaccines are administered correctly, that scenario sets up the best immune response from the vaccination.

"Let's consider our expectations of a vaccine. Vaccination is in preparation for the body dealing with an infection. It's like insurance. It's used as a tool for an infection a calf might encounter in the future," Vander Ley said. "But on arrival, the calf has already been exposed to a lot of pathogens, and then add stress."

The question then becomes is an animal, on arrival, too stressed for the vaccine to work to its potential? Vaccines need time to build an immune response, and if administered during a stressful time, is the immune response adequate? Vander Ley said the assumption is vaccination is, at worst, the loss of dollars used to purchase the vaccine.

A study conducted at the University of Arkansas looked at on-arrival vaccination and vaccination delayed until 14 days after arrival on 528 highly comingled, high risk calves. No metaphylaxis was administered. Average daily gain in the first 14 days in the delayed cattle was 1.16 pounds compared to

.88 pounds in the on-arrival cattle. By 42 days, the on-arrival cattle had gained some ground but still were gaining 0.1 pounds less on average.

After 42 days, there was virtually no difference in BRD treatment cost and no difference in death loss. Essentially all respiratory disease happened in the first 14 days – the timing of the vaccine didn't change the overall morbidity, Vander Ley said.

Looking at IBR titers, the calves vaccinated on day 14 were substantially more prepared to respond to the vaccine than those vaccinated on arrival.

"Those receiving the vaccine on arrival did not respond like we would hope," Vander Ley said.

Other, larger study was conducted and included an immunostimulant and metaphylaxis in the processing protocol. Although first treatment numbers were similar, the delayed treatment cattle showed a 4 to 5% decrease in BRD retreatment risk.

"What we see in these studies is there is no harm in delaying the vaccination," said Vander Ley. Delaying vaccination until the calves are settled and stress is reduced did not impact morbidity. He said further studies have been conducted and results are due to be published soon.

"It's important to consider the stress level of these calves and their risk." FL

Effect of Bovine Respiratory Disease (BRD) vaccination timing on performance of stocker cattle during the receiving period.

Item	On Arrival[1]	Delayed[1]	SE[2]	P-value
BW, lb[4]				
Day 0	435.4	431.4	2.42	0.33
Day 14	459.4	468.4	3.03	0.007
Day 28	478.8	484.4	2.93	0.16
Day 42	494.3	502.5	4.08	0.07
ADG, lb/d[3]				
Day 0 to 14	1.94	2.55	0.22	0.007
Day 14 to 28	1.34	1.17	0.15	0.45
Day 28 to 42	0.99	1.23	0.10	0.12
Day 0 to 42	1.43	1.65	0.09	0.05
Pasture ADG, lb[4]	1.96	1.85	0.08	0.15

1 Treatments were vaccination of incoming stocker cattle with modified live IBR, PI3, BRSV and BDV type I and II vaccine either on arrival at initial processing (day 0) or on day 14. Cattle were re-vaccinated day 14 following initial vaccination.
2 Standard Error of the mean (n = 524).
3 All analysis (except day 0 BW) was conducted using BW and gender on day 0 as covariates.
4 Grazing performance calculated subsequent to the day 42 receiving period.

Courtesy of University of Nebraska-Lincoln

BY JILL J. DUNKEL

Industry Eyeing ELD Mandate and Long Term Waiver

Agriculture industry associations are keeping a close eye on the Federal Motor Carrier Safety Administration's hours-of-service regulations pertaining to electronic logging devices, or ELDs. A ruling requiring ELDs in commercial motor vehicles regulated by the Department of Transportation went into effect on December 18, 2017.

On the same day, a 90-day waiver for trucks transporting agricultural commodities went into effect.

Organizations like NCBA, the Livestock Marketing Association, the American Farm Bureau Federation and many others have questioned the hours-of-service mandates affiliated with the ELD. The hours-of-service rule states that drivers are only allowed to drive for 11 hours, and can only work for a total of 14 hours, before taking a mandatory 10 hour break. The concern for the livestock industry are long distance hauls.

To abide by the regulation, a livestock hauler would have to pull off the road once the 11 hour drive time is reached and take a 10 hour break before completing his trip.

NCBA's Executive Director of Government Affairs Allison Cooke said they continue to be in conversation with the Department of Transportation's understanding about hauling live animals. There is a request for a one-year delay for livestock haulers that could be included in the appropriations package. A five-year waiver is also on the table.

"We are hopeful that DOT will provide livestock haulers the needed longer-term waiver from the ELDs before our current 90-day waiver ends on March 18, 2018. We are still working with DOT to get this item achieved to give us more time to work with Congress on Hours of Service changes," Cooke said.

The important thing is the welfare of the animals being transported, and getting them where they need to go safely, she added.

The DOT is looking at public comments submitted on the regulation, and members of Congress are interested in the issue.

American Farm Bureau Federation congressional relations director Andrew Walmsley said the mandate raises many concerns for livestock and ag commodity haulers. "I think there's a realization that there needs to be more flexibility in the devices," he said. "There's also an understanding that you can't just leave live animals on a trailer overnight if a driver runs out of hours of service. All those factors are contributing for the need for the agency to continue to work with Farm Bureau and others to address those concerns before any type of mandate were to take effect." FL

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BY PAUL DYKSTRA, PH.D. CERTIFIED ANGUS BEEF

2017: A Relatively Stable Interlude

The year saw strong demand, increased harvest numbers and a large quantity of premium cattle

Cattle markets in 2017 brought back a sense of stability, if that's not too obtuse in a business fraught with uncertainty. The year began with ambiguous tension, unfolding weekly for marketers made wary by three preceding years of tumultuous price swings. Anyone with a stake in the game felt the pressure of risk rooted in the uncertainty of just how good the market could be, or how bad.

As it turned out, fed cattle values held together quite well under further industry expansion and larger cattle supplies. No tremendous highs were reached, but the early May fed-steer price of $144/cwt. was a seasonally appropriate highlight, $8/cwt. higher than the prior year's annual high notched in March. On the bottom side, August brought on the dog days of summer, a $104/cwt. lower boundary—and relief that it didn't touch the dreaded chasm "south of $100." In fact, that boundary held $7/cwt. higher than the 2016 lows in October.

Higher highs and higher lows for the fed cattle complex were considerable wins for the feeding sector in a year that saw the harvested head count increase by 5.2%. The weekly steer/heifer average, at nearly 490,000 head, was up 24,400 from the 2016 average but partially offset by lighter weights. Steers carcasses came in 14 lb. lighter on the year while heifers were 11 lb. lighter, those declines effectively reducing tonnage by the equivalent of 7,330 head per week. Even so, the net-effect weekly increase still added up to 17,000 head.

Tracking packer profitability through 2017 was easy because those companies maintained positive margins virtually all year. While forced to advance cash bids beyond their sold-ahead product values in the spring, the rest of 2017 saw packers leading the production chain in leverage and profits.

A key element of packer profitability favoring all production sectors was the fact that those firms were willing to maximize production much of the time. This, while industry capacity to harvest cattle had declined in previous years under smaller cattle numbers, only to be met with the current expansion phase and larger fed cattle availability. Currentness and throughput of market-ready fed cattle kept prices higher than some expected, particularly in the 3rd and 4th quarters, anticipated trouble spots with a potential glut of fed cattle.

The cattle feeder's share of wholesale beef values varied widely in 2017 with a magnified "leverage shift" from the first half to second half of the year (see graph). January kicked off with wholesale beef prices depressed, returning a comparatively larger proportion of wholesale boxed-beef value to cattle feeders than they'd seen in a year. This developed as 1st-quarter "sold ahead" orders were strong at the packer level but supplies of market-ready cattle tightened at the transition to the 2nd quarter.

Feeders enjoyed the supply void as packers scrambled to find cattle with enough days on feed to reach the Choice and Prime grades along with enough Certified Angus Beef® (CAB®) branded product to fill their commitments. Grid premiums soared as the Choice-Select spread ranged from $20 to $25/cwt. in May and early June with CAB premiums touching $14/cwt. at the top of the reported range and a USDA average of $6.43/cwt. the week of June 19th.

The situation evolved as June and July fed supplies increased and a seasonally expected stronger marbling trend returned quality grade levels higher. That satisfied the demand side more readily, though still not tempering the quality premium spreads until August. With the fortified cattle supply and flow of Choice-and-higher product offering, the fed cattle price complex followed a seasonal pattern into the fall.

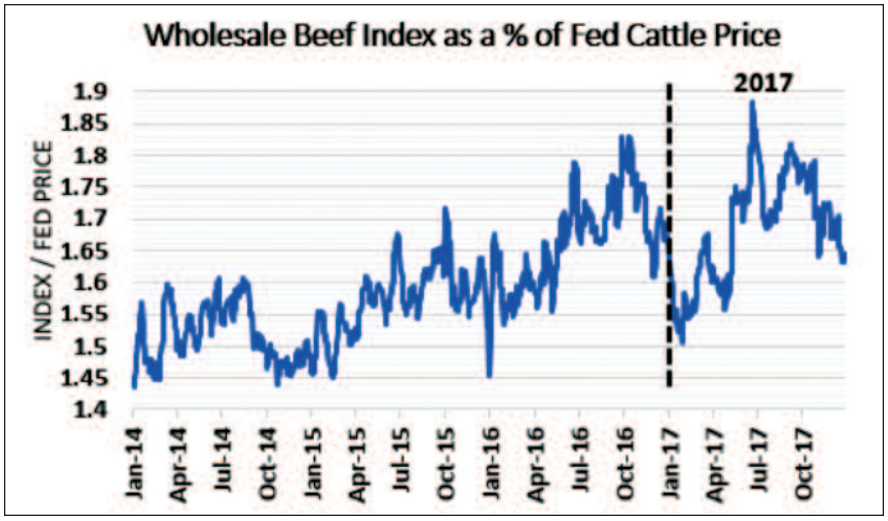
From early July through mid-October, Choice and Prime grading rates in packing plants began a push to outpace 2016's historically high levels by a combined 3 percentage points for the extensive period.

In somewhat related news, October brought about a USDA announcement that adjustments to enhanced camera grading equipment were necessary in some packing plants to realign the latest technology with Choice, Premium Choice and Prime grading thresholds. Initial impacts became clear in early November as the U.S. average percentage for Choice dipped to 68%, well below the 72% range seen both a year ago and just weeks prior.

Final tweaks to those changes saw the packing plant average quality mix improve into the end of the 4th quarter with the Choice percentage matching a year prior at 71%. Prime landed at a historic 7% of the fed cattle offering throughout December.

These quality trends were not without influence on the Certified Angus Beef® brand, since insufficient marbling (below Premium Choice) is the prevailing factor most responsible for exclusion of eligible carcasses under the brand's 10 carcass specifications. Even so, fiscal 2017 data logged sales at 1.12 billion pounds, a 10.4% jump, and the 11th straight year of record sales volume for the brand through licensed partners domestically and abroad.

By late November, the weekly CAB acceptance rate rose again to meet the recent annual average, right at the top of the range in the brand's 40-year history. Availability of eligible cattle looks bright as the share of fed steers and heifers



meeting live animal requirements in 2017 came in at a record 65%, a 3-percentage-point increase for the year.

Large weekly cattle harvest rates were not only noted on the younger fed cattle, but on cull cows as well. The beef cow harvest was up 9.7% on the year. Three factors likely initiating that beef cow flow were drought in the Dakotas and Montana, a larger total cow population to cull from and declining feeder calf values.

Measurable increases in fed heifers entering packing plants, up 12% on the year, provided a signal of slowing herd expansion in 2017. That number alone doesn't prove the case, but taken in contrast with their steer counterparts, up just 2%, it becomes clear that heifer retention was a smaller goal in 2017.

The coming two years are slated to see cow numbers continue to grow at a slowing pace as the expansion phase of the cattle cycle draws to a close. Continued projections for low grain prices will be a factor to watch as diversified producers raising grain and cattle may cast a more favorable eye toward the cow-calf profit centers, prompting some reallocation of farm resources.

Domestic and international beef demand was strong in 2017 in the face of growing total beef and competing protein supplies. A healthier U.S. economy and low unemployment has proven friendly to beef sales but the international trade balance was just as important. Year on year export sales to Japan and South Korea were tremendous despite the disadvantageous tariff position held by the U.S. relative to our competition. Analysts agree that demand will need to prove out again in the coming year as record protein supplies are in the offing. FL

BY MARK BATTERSBY

TAX REFORM

THE TAX CUTS AND JOBS ACT: EARNINGS

Are you ready for tax "reform?" Thanks to the final version of the Tax Cuts and Jobs Act, the tax rate for incorporated cattle operations and businesses will be reduced from its current 35-percent to 21-percent—for the 2018 tax year and thereafter. And, even better, the business tax cuts are permanent, although the reduced tax rates for individuals expire in 2026.

Unfortunately, while regular, 'C' corporations will be taxed at a flat 21-percent tax rate, the majority of small businesses operating as pass-through business entities might find themselves facing new personal tax rates higher than the new, lower corporate tax rate. Pass-through business entities such as partnerships, limited liability companies (LLCs), S corporations and sole proprietorships, pass their income to their owners who pay tax at the individual rate.

The new law allows pass-through owners who are married and make less than $315,000 (half that amount for single taxpayers) to take a 20-percent deduction. For pass-through owners with income above this level, the new law provides a deduction for up to 20-percent of business profits—reducing the owner's effective marginal tax rate to no more than 29.6-percent.

Complicating the much-needed tax break for pass through businesses is the necessity that all owners with pass through business income receive "reasonable compensation." In other words, a feedlot operated as a pass-through business, can pass any profits to the owner who will include 80-percent of those amounts on his or her personal income tax return—but only if the owner has received an undefined amount of reasonable compensation. Although just what is meant by "reasonable" compensation has yet to emerge, there is no doubt that it will be treated as wages subject to withholding and taxed at the new individual tax rate.

Lawmakers long-ago created a unique 20-percent tax rate as part of a parellel tax system that limited tax benefits to prevent large-scale tax avoidance. Under this system, incorporated feedlots and other businesses were required to calculate both their ordinary tax and the AMT tax, paying whichever was higher. Fortunately, the Corporate AMT has been eliminated, lowering taxes and eliminating the confusion and uncertainty that surrounded it in the past.

Obviously, there are many more changes contained in the massive Tax Cuts and Jobs Act. A full 100-percent deduction is available for the cost of equipment and the Section 179, first-year expensing allowance is now $1 million (up from $500,000 in 2017) for business equipment and property expenditures. The ceiling after which the Section 179 expensing allowance must be reduced dollar-for-dollar has also been increased from $2 million to $2.5 million.

Section 199, the deduction for so-called "domestic production activities, has been repealed. Partnerships will no longer cease to exist upon the death or exit of a partner. The dreaded, Corporate Alternative Minimum Tax has been eliminated but the tax deduction for interest expenses can no longer exceed 30-percent of the operation's adjusted gross income.

With few exceptions, the potential tax savings from the Tax Cuts and Jobs won't appear until the feedlot's tax bill for 2018 comes due. Planning to reap those savings should, of course, begin immediately. FL

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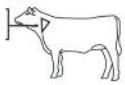

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DAIRY COWS	4 weeks before calving 4 weeks before insemination at dry-off
CALVES	at birth at 3 months and/or weaning
HEIFERS	every 3 months – especially 4 weeks before breeding
(program gives planned dates that can be varied to suit management programs)	

DOSAGE TABLE

ANIMAL WEIGHT (lbs)	CALVES UP TO 1 YEAR 1 ml/100 lb BW	CATTLE 1 - 2 YEARS 1 ml/150 lb BW	CATTLE > 2 YEARS 1 ml/200 lb BW
50	0.5 ml	-	-
100	1 ml	-	-
150	1.5 ml	-	-
200	2 ml	-	-
300	3 ml	-	-
400	4 ml	-	-
500	5 ml	-	-
600	6 ml	-	-
700	7 ml	-	-
800	-	5.3 ml	-
900	-	6 ml	-
1000	-	6.6 ml	5 ml
1100	-	-	5.5 ml
1200	-	-	6 ml
1300	-	-	6.5 ml
1400	-	-	7 ml

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BY **MYRIAH JOHNSON, PH.D.**
AGRICULTURAL ECONOMICS CONSULTANT, NOBLE FOUNDATION

Consider Your Options: Graze-out vs. Harvesting Wheat

As we move into 2018, it will soon be time to think about whether to pull cattle off wheat so it can be harvested for grain or to leave the cattle on the pasture through wheat graze-out. One of the biggest concerns this past fall was the lack of moisture received. This will ultimately impact producers' decisions this spring, too.

In evaluating the graze-out or wheat for grain options, a partial budget can be a useful tool. For this, we'll assume you could continue with a 650-pound steer in March and take him to 800 pounds in early May. Estimated prices in Oklahoma City are $158.85 per hundredweight and $137.47 per hundredweight, respectively. We'll also assume 1.25 head per acre during this springtime period of graze-out. Ultimately, an additional $86.66 in revenue could be generated with graze-out wheat.

The expected cash price for wheat in south-central Oklahoma early next June is $3.92 per bushel. Using the five-year average Oklahoma wheat yield of 29.4 bushels per acre, a revenue of $115.25 could be generated by cutting wheat for grain. Revenue is only half the picture as we must also take costs into account. With harvesting wheat, you'll have the associated fungicide, weed control, combining and hauling costs to consider. With stockers, you'll still have the cost of hauling them to the auction barn.

Taking all this into account, it appears that taking the stockers through graze-out will be more advantageous by about $21 per acre. However, the picture starts to change if you can beat Oklahoma's five-year average yield of 29.4 bushels per acre. If you can produce 35 bushels per acre, you could expect the same returns as grazing out cattle. Any improvements in yield will favor pulling cattle and cutting the wheat for grain.

As always, keep your pencils sharp. These price relationships will have changed by the time you read this article. Crunch these numbers for your own operation, and don't hesitate to contact your Noble Research Institute economist. FL

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[1] Exhibits bactericidal activity against some strains of *Mannheimia haemolytica* and *Histophilus somni*.
[2] The correlation between *in vitro* susceptibility data and clinical effectiveness is unknown.

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MERCK Animal Health

BY TERRI QUECK-MATZIE

CAMERA GRADING AND THE MARKET

Increased demand for Choice, Prime and Premium Choice branded beef traditionally sets the tone for fourth-quarter pricing, but late 2017 included an additional factor.

A technical adjustment to USDA grading cameras may have played a role in beef buyers paying more.

"Some analysts have pointed to the camera grading changes as a causative factor in packers paying more for cattle, especially of higher quality, but actual impact may be less dramatic than the news," says Paul Dykstra, Beef Cattle Specialist for Certified Angus Beef LLC, in his bi-weekly CAB® Insider report. The CAB cutout the second week in November was up $5/cwt. Choice was up $5.50 and Select nearly $2.

The problem

Fifteen beef packing plants, processing about half the nation's fed steer and heifer slaughter, use cameras for quality grading. This summer nine of those plants upgraded to a newer version of one of the cameras. The change, like all upgrades and adjustments, was evaluated through in-plant trails conducted by the USDA Agricultural Marketing Service (AMS) and the Agricultural Research Service's U.S. Meat Animal Research Center (US-MARC). AMS approved the newer version camera based upon acceptable performance during the in-plant trials.

But, according to a November 3 letter from USDA Under Secretary for Marketing and Regulatory Programs Greg Ibach to beef chain stakeholders, over time the professional USDA graders began to notice the camera didn't always work as expected. The inspectors have the ability, and ultimate responsibility, to override questionable camera grades, and they were doing so at a higher than normal rate.

AMS began working with the camera manufacturer and industry players to collect in-plant performance data. The data indicated an adjustment was needed to ensure the camera provided accurate and consistent assessments to the USDA graders, and the necessary software adjustments were made October 26.

More data was collected and analyzed by US-MARC, and additional camera adjustments were made November 9.

Market impact

The timing has led many to believe the camera changes affected pricing and the quality spread.

Dykstra describes the picture as "a combined seasonal impact with a likely added effect due to a slightly smaller percentage of carcasses reaching the Choice grade than expected."

In 2016 year, with the normal seasonal spread widening, the Choice/Select spread was in the $15/cwt. range. According to 2017 numbers the weekly average Choice/Select spread for the week of October 30 was $10.40/cwt. jumping to $17.58 for the week of

November 20 and $21.43 for the week of November 27.

With the camera adjustments in place the USDA data for November 20 showed just over 1 percent decline in Choice grade carcasses from last year.

"The share of Choice carcasses certified into Premium Choice brands made a notable 3-point decline during the first week of November, down from 29.2 percent, but quickly recovered in the following two weeks on further adjustments to 28.8 percent [in the November 27 report]," said Dykstra.

While individual circumstances may display a different picture, industry-wide the experts agree the impact of the camera glitch was likely minimal. Ibach credits that to the human USDA graders. "The simple fact is that a trained, impartial USDA grader assigns the final grade to each and every beef carcass," he said. "We ensure that these men and women have full authority to override camera grades when they believe they are not accurate. Again, we have communicated our expectation that our grading professionals assure the accuracy and consistency you all expect and deserve from USDA."

To ensure that safety check continues the November 9 camera upgrade came with a change in USDA policy. The override procedure was adjusted from 40 degrees to 20 degrees. "This will provide USDA graders additional flexibility to override a grade assigned by a camera if that grade is more than 20 degrees off," said Ibach.

The USDA expects the change to be temporary until additional data can verify the camera software upgrades are effective.

"We know that the entire value chain – from cow-calf producers to feeders, through packers, and ultimately to the consumer – depends on those grades being accurate and consistent," said Ibach. "The USDA is committed to ensuring our mutual goal of protecting the integrity of our beef grading services." FL

Cold Stress in Calves

BY **HEATHER SMITH THOMAS**

Strategies to warm a cold calf

Calves born in cold weather suffer adverse effects if they don't get right up and nurse before they chill. How well a calf can cope with cold starts with nutrition of the dam, and the fat content of her feed in mid-to-late gestation.

Dr. Russ Daly, Extension Veterinarian, South Dakota State University, says cold stress in calves may be aggravated if the cow is in poor body condition or doesn't have adequate protein and energy during late gestation; the newborn calf will have decreased amounts of brown fat for energy reserves and chills quicker.

"Protein and energy are crucial, and research shows that supplying supplemental fat to cows in late gestation helps the calf be better prepared to handle cold weather," says Daly. Also, if cows have adequate levels of protein they produce a healthier, more vigorous calf at birth, and better colostrum.

Timely ingestion of colostrum is a big factor in whether a calf can handle cold. "I was involved in a study with Holstein calves in which some did not receive colostrum. In cold weather, it was obvious which calves had gotten colostrum and which didn't. There's much more to colostrum than antibodies. It contains much higher levels of fat and protein than regular milk," he says.

If the calf gets too cold before he can suckle, he won't get the colostrum he needs—and gets even colder. Colostrum contains 2 to 3 times the fat of regular milk, and provides energy to keep warm; he can handle the cold much better if he's nursed.

"A newborn calf with a full feed of colostrum can quickly absorb lipids (fats) and amino acids, and this aids metabolism; the body doesn't have to burn so much brown fat to keep warm. Most calves that are adversely affected by cold stress were unable to nurse," says Daly. Force-feeding colostrum can make a difference in survival.

If a calf becomes too chilled, he may not absorb antibodies as readily when you do feed him. Calves that have undergone cold stress are more likely to have problems with scours, pneumonia and other infections.

"Stress—whether from cold, or a difficult birth—can interfere with optimum absorption. If it's a question of warming him or giving colostrum first, don't delay on the colostrum," says Daly. Bring him in from the cold and provide colostrum at the same time he's starting to warm up.

Steve Hendrick of Coaldale Veterinarians, Coaldale, Alberta, says it's important to have lots of bedding if cows are calving in cold weather. This may help keep a newborn from chilling so quickly; there's more chance he'll be able to suckle before he's too cold. In severely cold weather, calving cows should be moved into shelter.

Get colostrum into a calf immediately if he's already cold. Even if he's indoors, if it's 5 hours before he gets a belly full of colostrum, he'll suffer more cold stress than if he was able to nurse within the first hour. "Even if you get the calf warmed up, if he hasn't nursed you are behind the 8-ball. He needs nutrition from colostrum and the antibodies to protect him from disease," says Hendrick.

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Cold Stress in Calves... *from previous page*

Warming a Calf

"If you find a calf you missed and he's chilled, taking him inside is imperative," says Hendrick. "The fastest way to warm one is directly, with warm (not hot) water. This direct contact is quicker than warm air. A hot box is great—a small heated area where you can put a chilled calf—but works best for mild cases when a newborn calf is chilled and needs to dry out."

The fastest way to warm one is directly, with warm water. This direct contact is quicker than warm air. A hot box is great but works best for mild cases when a newborn calf is chilled and needs to dry out."

A calf born in below-zero temperatures and already freezing is an emergency. "Warm water will be quicker, whether it's the bathtub or some other method. You don't want frozen feet, ears, and tails. Even after you've thawed and dried the calf and he's back with mom, watch for swelling," says Hendrick. Calves with frozen feet may not be able to function.

Daly says you can often reverse frostbite with warm water, if the calf hasn't been cold too long. "The key is warm water, not hot. This can help warm the tissues, but don't rub very much because those tissues may be damaged from freezing and you could damage them worse."

Most of the calves he's seen with frozen feet were usually debilitated from some other reason, like scours. The dehydrated calf has less blood flow to extremities; limbs become cold and more vulnerable to freezing. If a calf is sick he's usually spending too much time lying down--unable to get up and walk around and get circulation going. Blood perfusion to the limbs is severely compromised; you might not realize these calves may freeze their feet at temperatures that would not be dangerous to a normal calf.

"One of the fastest ways to help warm a newborn is to get mom's milk into him or some warmed-up colostrum," says Hendrick. This helps warm him from the inside as well as providing energy. The faster you get warm colostrum into him the better. The clock starts ticking on gut closure (ability to absorb antibodies) as soon as he is born.

"If you take him away from mom to warm him before he's nursed, he's not getting antibodies, he's not getting nutrition, and you need to supply some during the warming process. It will be hard on that calf if it's 6 hours later before he gets colostrum from mom," says Hendrick. Give him a jump start with colostrum as soon as possible.

Daly says there are many options and designs for building your own warming boxes. "There are also nice commercial boxes. They may be more expensive, but often made from a poly type of plastic which is easy to clean. Wood boxes work very well to insulate the calves, but are a lot harder to completely clean." Boxes should be cleaned and disinfected between calves.

"We've seen several situations in which lack of sanitation in warming boxes led to increase in calf scours. You also need good ventilation, and some way to remove humidity. If it's too humid, you have more problems with respiratory diseases in the calves as well as a buildup of pathogens in that kind of environment," says Daly. FL

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MERCK Animal Health

BY HEATHER SMITH THOMAS

Scrotal Frostbite Can Hinder Fertility

Cold windy weather is hard on cattle, and bulls may suffer scrotal frostbite. This can lead to temporary infertility and in severe cases permanent infertility, according to John P. Kastelic, DVM, PhD, Professor, Cattle Reproductive Health (Theriogenology) Department of Production Animal Health, University of Calgary.

"Factors that can lead to scrotal frostbite include not only cold temperatures and wind, but also lack of adequate bedding and dietary energy. Scrotal frostbite is most common in older bulls because they have a more pendulous scrotum," he says.

A windbreak is essential during winter storms, since wind chill greatly increases risk for frostbite. Trees and brush serve as natural windbreaks. "Where there's no natural shelter, the ideal man-made windbreak has 20% porosity (space between boards)." This slows down the wind but doesn't stop it completely; if you stop the wind it just blows over the top and down and there's less protected area behind the windbreak.

"Inadequate bedding is another problem for bulls if they have to lie in snow or on frozen ground. Inadequate dietary energy also predisposes them to more cold stress," he says. Cattle need extra calories in cold weather to generate body heat.

Damage from scrotal frostbite can vary. "It's not the actual cold that causes the problem. Damage comes from subsequent inflammation and heat in the tissues after the cold insult. After tissue freezes, the inflammation that follows is the problem," he says.

Evidence of scrotal frostbite is scab formation, usually on the bottom and back of the scrotum. "Fertility problems depend on how extensive these lesions are. Frequently we see small scabs at the bottom and these may be of little or no consequence. There may be a short-term problem and it resolves fairly quickly. Prognosis gets worse with larger lesions. Rule of thumb: if the scabby area is less than half the scrotum, there's a better prognosis," he explains.

"The worst prognosis is when adhesions form between scrotum and testes. You can detect this condition by restraining the bull and palpating the testes, trying to force them higher in the scrotum." If they are immobile, that's a serious problem.

"If the testes don't move, or draw the scrotum up with them because of adhesions, there's little or nothing you can do to overcome this problem because those adhesions tend to be permanent," says Kastelic.

Every bull should have a complete

physical exam and semen evaluation. "If a bull has mild frostbite (a couple inches of scabbing on the bottom of the scrotum), his semen quality may drop for 3 or 4 weeks. If scabbing is more extensive/severe, semen quality may be diminished for 6 weeks or more. If most of the scrotum is affected, with adhesions, he may never return to normal."

The testis has good regenerative capacity; it takes a severe and prolonged insult to permanently affect fertility. Usually within 6 to 8 weeks, the bull is back to normal. The concern would be how soon you need him for breeding. Calving in March/April and breeding in June/July, most bulls will no longer have a fertility problem after suffering frostbite. If you calve in January and start breeding in late March, this could be a more serious issue. Some bulls may not recover in time. If you have any question about a bull he should be checked. If a bull has an issue with semen quality, you can check him again in a few weeks.

"When we do a breeding soundness evaluation we put bulls into three categories: satisfactory, unsatisfactory, and decision deferred. The latter category covers bulls that don't meet standards but we have expectations they will continue to improve. The bull has a problem that has a reasonable chance of improving with time. We use this category a lot with young bulls that may not be mature enough to have good semen, and also use it in a situation with scrotal frostbite where there's damage, but the bull seems to be recovering. In this case, we recommend looking at that bull again in a month or so. This may or may not be too late for anticipated use, depending on how late the breeding season might be," says Kastelic.

Since there's not much we can do after the fact to help a bull recover from scrotal frostbite (except give him time and hope for the best), the important thing is prevention. The best prevention is shelter and bedding.

We can't improve on nature; we just have to manage bulls to give them natural protection. It's common in spring to see small scabs on bulls after a cold winter, but those generally heal with time. An early winter storm may catch producers off guard with inadequate bedding and shelter, but there's usually time for a bull to heal unless there is severe damage. A late winter storm or spring blizzard with wind and cold may be more devastating because there's less time for recovery before breeding season. "It may also be harder to find a replacement bull that late in the season, because the selection may be more limited," he says. FL

BY **BRUCE DERKSEN**

View from the Saddle:

PLAN TO HAVE A PLAN

For farmer-feeders balancing livestock and farming operations, a plan is essential to keep both sides of the business running smooth

During harvest or calving, often the reduced numbers of cattle in the feedlot and the feedlot in general, can get somewhat ignored on a farmer-feeder operation. Feedlot owners and managers that are heavily involved in farming and ranching can get stretched thin and if there is not someone dedicated to keeping operations running smoothly in the pens, figurative storm clouds can appear on the horizon for barn staff and pen checkers.

Many famous and surely more intelligent people than myself have made quotes about the values of good planning and the hazards of not doing so. My favorite one is, "having no plan is not a plan." Some feedlots and farms I have worked on through the years seemed to use the opposite philosophy as their motto. All staff would know there were orders placed with livestock buyers for weaned calves and grass cattle, so eventually they would start showing up at the gates. But there didn't seem to be anything happening to prepare for that day. Fences were in disrepair, gates sagged, waterers slowly ran over or didn't run at all, the processing and treating shelves were bare of medications, needles, syringes, and applicators among other things. Then when the calves would suddenly arrive, the managers would grudgingly walk away from farming or calving and frantically try to play catch up. Usually this would either mean the first groups of calves would not get the full array needed, or would walk the pens for days before they were processed. More stress would be applied to everyone to rush and compensate for the lack of planning. Pen checkers and barn staff would be forced into duties they were unfamiliar with just to keep things moving.

As other timely tasks take presidence over feed yard operations, a plan can keep the business in running order.

Things ran much smoother on feedlots where someone was in charge of working with a veterinarian and establishing a plan early for purchasing processing medications and treatments for the new cattle. Even better were those operations that were able to buy in bulk as there wasn't always the threat of running out of things after each new group of cattle was brought in.

Many feedlots invest time and effort into researching and learning as much as possible about each group of incoming cattle they receive. Some lots might be from one owner, or grouped in pre-conditioning sales with certain treatments already completed. Sometimes it is possible to learn if groups of cattle have had exposure to bunks, or to waterers, or if they've been started on feed. All this information can be helpful in grouping cattle and deciding what medications need to be used for processing, along with any extra measures needed to get the new cattle drinking and eating as soon as possible.

Others planned ahead and moved pens of existing cattle to either isolate incoming cattle or group them nearest to the treating barns. Remember some pen checkers may not be as experienced as others. Grouping cattle properly can allow for training pen checkers or allow the more experienced riders to work the new cattle and the less experienced to concentrate on the existing cattle. It's not fair, prudent or cost effective to ask new, inexperienced pen checkers to over-see a large amount of freshly weaned calves.

Establishing a management system plan of how to pull and treat sick cattle is another good plan. It shared with the pen checkers so everyone understands what needs to be done. It's much easier and more cost effective to have a system in place that works and everyone understands.

Remember, it's a fact that I don't think anyone would deny, that the health, performance and carcass quality of cattle is greatly influenced by how the receiving phase works, and with the large investment of owners required to fill feedlot pens today there is a need for a solid plan to give cattle the best opportunity to perform and reach their potential. Not to mention, it's much easier on this old cowboy's OCD when there not only is a plan, but it's also a good one.

Bruce Derksen worked in the livestock industry and specifically as a feedlot pen rider for over 30 years in Western Canada. He now lives in Lacombe, Alberta. He writes about present day feedlot and ranching practices, drawing on his numerous experiences in the industry. FL

Online Resource to Connect Custom Feeding Partners

Custom cattle feeding can be a win-win strategy when done correctly. "Feeding someone else's cattle provides a method to market feedstuffs without tying up the capital required to own the livestock," said Warren Rusche, South Dakota State Univeristy Extension Beef Feedlot Management Associate.

Rusche explained that custom feeding arrangements allow cattle owners access to management expertise and facilities they may not possess, opportunities to capitalize on superior genetics and options in the event of feed shortages.

Connecting cattle feeders with interested cattle owners can happen in a number of ways, Rusche went on to say.

"Word-of-mouth, allied industry contacts and advertisements are common methods," he said.

Currently, SDSU Extension is developing an online resource for cattle feeders who are interested in custom feeding cattle. If you are interested in being listed in that directory, visit www.igrow.org/livestock/beef/finding-choosing-custom-feeding-partners/.

"As with any business arrangement, both parties need to do their homework and ask the right questions," Rusche said. "Most deals that end up badly do so because of lack of communication and due diligence at the outset."

Are they the right partner?

Not all ranches or cattle are alike, so it stands to reason that not every feedlot is suited to every customer and every type of cattle.

"For example, an operation that uses cattle feeding to add value to large amounts of high-moisture corn is not likely to be a great fit for someone needing replacement heifers developed," Rusche said.

If a customer has a particular business model in mind (i.e. high-risk calves, carcass data with grid marketing, etc.), they need to make sure that the cattle feeder understands how to manage that particular class of cattle.

Get it in writing

There's an old saying that good fences make good neighbors. "The same could be said about written agreements," Rusche said. "Having a written agreement forces everyone to think about the entire transaction, what could go wrong, and how those concerns will be addressed." Written contracts help to ensure there are no disagreements about who said what and what was agreed upon. Contracts also establish the framework to resolve conflicts if any arise.

What are the expectations?

Any cattle feeder will tell you that not all calves are created equal and that there is considerable variation between sources and management systems.

"There should be a frank discussion about everyone's goals and expectations are for performance, sickness rates and death losses and

whether or not those expectations are realistic," Rusche said.

Resources and references

Before sending cattle to a custom feedlot, the owner should make sure that all the necessary resources are in place.

"Facilities and equipment don't need to be gold-plated, but they do need to be functional," Rusche said. He added that the level of experience and the caliber of any outside expertise, particularly nutritionists and veterinarians, should be assessed as well.

"Talking with individuals who have knowledge of the operation could provide valuable insight into a feeder's capabilities," Rusche said. FL

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